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BULLETIN

of the

BRITISH ORNITHOLOGISTS' CLUB

EDITED BY

DR. J. F. MONK

Volume 100
1980

BRITISH MUSEUM
NAT. HIST.
24 MAR 1981
PURCHASED
ZOOLOGY LIBRARY

PRICE: SEVEN POUNDS FIFTY PENCE

PREFACE

Volume 100 will always be distinguished by the centennial issue in March, with its 132 pages and special covers. The Club should find it most gratifying that 30 invited authors, including the Hon. Sec., so ungrudgingly gave up their time to devote their expertise to write their reminiscences or review ornithology across the world in zones of their own particular zoogeographical interest for the embellishment of the *Bulletin*. To them all the Club is sincerely grateful and its members much enlightened.

I owe more thanks than usual to the other authors for their patience, since the centennial issue tended to prevent prompt correspondence and has inevitably delayed publication of papers by an extra 3 months; but it is hoped that publication delay can be reduced to its usual 6 months or so by the end of 1981.

This is the last year that Mr. and Mrs. C. W. Benson will be able to provide their unfailingly accurate index, which they have been compiling for 10 years. The Club is most profusely grateful for their punctual and punctilious extraction of this important and essential complement to the text. Mrs. M. Hawksley is also to be thanked sincerely for her considerable help to Con and Molly Benson.

As always I am glad to be able to thank referees, authors and the printers for their good nature and help in the production of their work at all stages.

JAMES F. MONK

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Deaths

The Committee much regrets to record the deaths of the following Members:-

Miss I. Phyllis Barclay-Smith, c.b.e.

Dr. L. H. Brown, o.b.e., ph.d.

Mr. E. R. Parrinder, c.b.e.

Resignations

Coles, D. C.; Jackson, H. D.; Parsons, J.; Quickelberge, E. C.; Taylor, R. C.; Watts, D. E.

Removed from Membership

Armistead, H. T.; Armitage, J. S.; Beesley, J. S. S.; Bramley, A. D.; Dirks, Mrs. June M.; Lewis, R. E.

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Corrigenda

Bull. 99, 1979
p. 37, line 48: ‘*Turdoides reinwardtii*’, not ‘*Turdoides jardineii*’
Bull. 100, 1980
p. 62, line 9: ‘*helvola*’, not ‘*helveola*’
p. 62, line 11: ‘*clamans*’, not ‘*clamens*’
p. 79, line 33: ‘*sechellensis*’, not ‘*seychellensis*’
p. 79, line 44: ‘*sechellarum*’, not ‘*seychellarum*’
p. 80, line 15: ‘*Sterna*’, not ‘*Stern*’
p. 92, line 10: ‘*megarhynchos*’, not ‘*megarynchos*’
p. 92, line 41: ‘*latirostris*’, not ‘*latriostris*’
p. 94, line 24: ‘*Diomedea*’, not ‘*Diomedia*’
p. 100, line 18: ‘*Cyanoramphus*’, not ‘*Cyanorhamphus*’
p. 111, line 20: ‘*capense*’, not ‘*capensis*’
p. 152, Table 2, line 5: ‘*Rollandia*’, not ‘*Rolandia*’
p. 153, line 24: ‘*microptera*’, not ‘*micropteram*’
p. 169, line 27: ‘*Lagonosticta rhodopareia jamesoni*’, not ‘*Rhodopareia jamesoni*’. ‘*L. r. bruneli*’, not ‘*R. bruneli*’
p. 185, title to Fig. 1: ‘*ichthyaetus*’, not ‘*ichtyaetus*’
p. 193, line 17: ‘*Ichthyophaga*’, not ‘*Icthyophaga*’
p. 193, line 37: ‘*Collocalia*’, not ‘*Collacalia*’
p. 203, line 26: ‘*chrysaetos*’, not ‘*chrysaëtos*’
p. 205, line 2: ‘Peninsula’, not ‘Penisula’
p. 207, line 44: ‘*cincta*’, not ‘*Cinta*’. ‘Chatham’, not ‘Chathan’
p. 236, line 19: ‘*Glaucidium*’, not ‘*Glaucedium*’
p. 238, line 15: ‘*Collocalia*’, not ‘*Callocalia*’

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The Caxton & Holmesdale Press, Sevenoaks

ISSN 0007-1595

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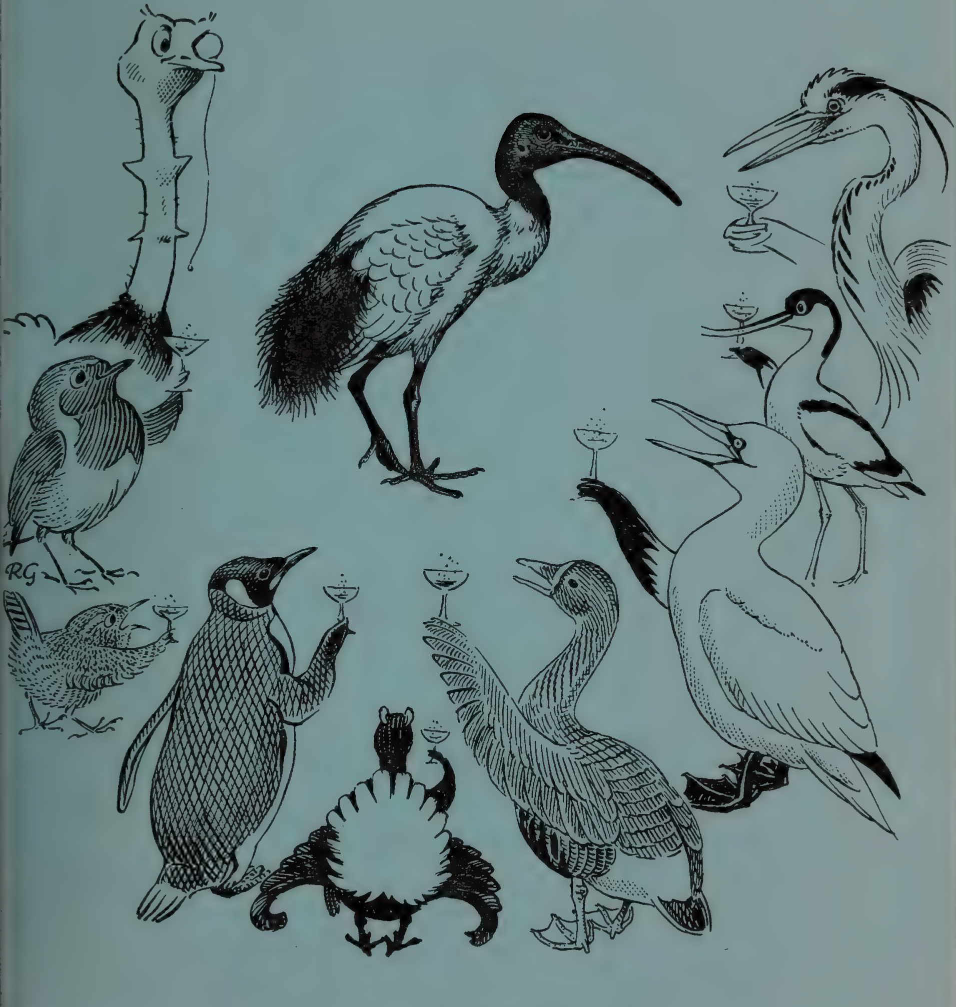

Edited by
Dr. J. F. MONK

Volume 100 No. 1 March 1980

FORTHCOMING MEETINGS

Tuesday 15 April 1980 **TO COMMEMORATE THE 100th VOLUME OF THE BULLETIN.** At 6 p.m. for 6.45 p.m. at the Senior Common Room, South Side, Imperial College, Prince's Gardens, S.W.7. After dinner the Earl of Cranbrook, Ph.D. (presently Editor of *Ibis*) will reply to the Chairman's toast to the guests. The speeches will be followed by an address by Dr. D. W. Snow on his recent exploratory visit to Brazil for the B.O.U. and thereafter Mr. Jeffery Boswall will show two films – "Wildlife Safari to Mexico, Sea of Cortez" and "Wildlife Safari to Thailand, Temple Storks" by courtesy of the B.B.C. Those wishing to attend (all members of the B.O.U. and their guests are welcome) should send their acceptance with a cheque for £4.90 a person to the Hon. Sec. at 2 Chestnut Lane, Sevenoaks, Kent TN13 3AR (tel. Sevenoaks (0732) 50313) to arrive not later than first post on Thursday 10 April 1980.

Tuesday 13 May 1980 at 6.30 p.m. for 7 p.m. (following the Annual General Meeting) at the same venue *Dr. L. H. Brown, O.B.E.,* on *Flamingos and Pelicans on the Rift Valley Lakes.* Those wishing to attend should send their acceptance with a cheque for £4.65 a person to the Hon. Secretary (address above) to arrive not later than first post on Thursday 8 May 1980.

Saturday 31 May 1980 A visit to the Harrison Zoological Museum, Sevenoaks (close to the station), with its notable collection of skins and mounted birds, at 11.40 a.m. After a buffet lunch, to the Gravel Pit Reserve created by the late Dr. J. G. Harrison. Those wishing to attend should send their acceptance with £2.80 per person for buffet lunch, plus a stamped addressed envelope for a reply with full particulars, to reach the Hon. Secretary not later than Tuesday 27 May: the number is limited to 25 and priority will be given to those who apply first.

Tuesday 8 July 1980 at Imperial College. *Mr. Richard Porter* on *Raptor Migration in Europe and the Middle East.*

Tuesday 16 September 1980 Mr. J. A. Hancock on his recent expedition to the Chaco and Corrientes in N. Argentina.

Please inform the Hon. Secretary (tel. 0732 50313) without delay if you accept and are subsequently unable to attend.

BULLETIN EDITOR. All correspondence on editorial matters should be sent to the Editor, Dr. J. F. Monk, the Glebe Cottage, Goring, Reading RG8 9AP.

SUBSCRIPTION TO THE BULLETIN. The *Bulletin* may be purchased by non-members on payment of an annual subscription of £9.00 (postage and index free). Orders should be sent to the Hon. Treasurer, Mrs. D. Bradley, 53 Osterley Road, Isleworth, Middlesex TW7 4PU. Single issues are obtainable as back numbers (see below). **All remittances to the Club should be in sterling unless an addition of 95p is made to cover bank charges.**

BACK NUMBERS OF THE *BULLETIN.* Available on application to Dr. D. W. Snow, Zoological Museum, Tring, Herts HP23 9AP, England, as follows: 1980 (Vol. 100 No. 1) £4.00; 1973 – 1979 (Vols. 93–99) issues (4 per year) £2.00 each; 1969–72 (Vols. 89–92) issues (6 per year) £1.50 each; pre-1969 (generally 9 per year) £1.00 each. Indices £1.00 each. Runs of 10 years or over may be available on special terms, higher prices will otherwise be charged for certain scarce numbers.

MEMBERSHIP. Only Members of the B.O.U. are eligible to join the Club; application should be sent to the Hon. Treasurer, together with the current year's subscription. Payment of subscription entitles a Member to receive all *Bulletins* for the year. Changes of address and all other correspondence concerning Membership should be sent to the Hon. Treasurer as promptly as possible.

OTHER CORRESPONDENCE. Correspondence about Club meetings and other matters not mentioned above should go to the Hon. Secretary, R. E. F. Peal, 2 Chestnut Lane, Sevenoaks, Kent TN13 3AR.

COMMITTEE.

P. Hogg (*Chairman*)	Dr. G. Beven (*Vice-Chairman*)
R. E. F. Peal (*Hon. Secretary*)	Mrs. D. M. Bradley (*Hon. Treasurer*)
Dr. J. F. Monk (*Editor*)	B. Gray
R. D. Chancellor	J. G. Parker
C. F. Mann	

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Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 100 No. 1 Published: 20 March 1980

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CHAIRMAN'S FOREWORD

This special number of the *Bulletin* opens the hundredth volume and comes 12 years before the Club attains its first centenary in 1992, the explanation being that various extra volumes have been published to cover special reports, as the Secretary's review makes clear.

To mark the occasion we have invited a world-wide review of the progress of ornithology and we are deeply grateful to the eminent people who have contributed so willingly to this end. We are also indebted to Robert Gillmor, who has generously designed the front cover of this number.

Some of our most senior members have been kind enough to give us reminiscences of earlier days. Alas, some of these have died since we received their contributions and to others our approach was forestalled by their death. These acccounts give some fascinating glimpses of past events and controversies and highlight the characters of some of our more colourful former members. We are pleased that such recollections can now be preserved for posterity. Our oldest member, Captain Collingwood Ingram, F.Z.S., still vigorous in his 100th year, felt unable to add anything significant to the enjoyable reminiscences which he published in 1966 in his *In Search of Birds* (pp. 160 - 171).

It is interesting that the earliest venue for dinners was Frascati's, an expensive restaurant in Oxford Street, from which they switched to Pagani's in Great Portland Street in 1907 for the next 26 years, albeit not without looking for less expensive places. In 1903/4 their five course dinner cost 5*s.* and so it remained until 1920 when it was raised to 6*s.*6*d.* In 1923, to keep it at 6*s.*6*d.* one course was shed. In 1933 they moved to the Knightsbridge Hotel and switched to the Rembrandt in 1934. Continuing rises in the Rembrandt's charge from 9*s.*6*d.* for four courses in 1934 to 12*s.*6*d.* for three in 1957 and 30*s.* in 1968 led to a move to the Criterion, Piccadilly in 1969, and thence to the Café Royal in Regent's Street in 1972, with an occasional cheaper alternative of a buffet supper elsewhere. Restaurant prices being what they now are in London, we count ourselves exceedingly fortunate today to be enjoying the hospitality of Imperial College's Senior Commonroom for our dinners.

Our Club resisted membership of women longer than its parent, the Union. Not until 1921 were those in favour of admitting them able to obtain a majority. Miss E. P. Leach had the distinction of being the first woman to serve on the Committee, in 1937, followed in 1940 by Miss P. Barclay-Smith, whose death last Christmas came as an unexpected shock. During the war Miss Leach became the Club's first woman Officer, serving as Treasurer from 1942 to 1949, and Miss E. M. Godman became Vice-Chairman in 1947-8, only her early tragic death preventing the probability of her being elected the Club's first lady Chairman. Mrs. P. B. Hall was thus the first woman to chair a meeting of the club, while serving as Vice-Chairman in 1960-2, but she was unable to accept the Chairmanship.

A perusal of the Club's Minutes shows that most of them are dry bones of recorded facts; but occasionally one gets a hint of the passions aroused over George Bristow's "Hastings Rarities" and, in the early twenties, over the question of how the Cuckoo deposits its eggs, Bunyard still wearying the Committee with correspondence on the subject up to 1935.

Relations between the Club and its parent body, the Union, have generally flowed in smooth and amiable channels. Inevitably there have been occasional coolnesses as when, in 1915, the B.O.C. Committee, not surprisingly, "were not able to entertain" a suggestion by the B.O.U. Committee that description of new species and genera should be epitomised in the *Bulletin* and published in full in *Ibis*; or, in 1925, when the B.O.U. asked that records of rarities should not be published in the *Bulletin* until authenticated by the B.O.U. Committee. This received a rather huffy answer that "the Editor of the *Bulletin* would use his discretion".

Despite the regularly recurring difficulty of keeping solvent a body whose membership has rarely exceeded 250, of whom many were abroad or, if in the U.K., too far from London to attend any but the most special of its functions, the Club still carries on happily and subscribers to the *Bulletin* have increased round the world. For this we have chiefly to thank that small core of devoted people who have served the Club as Officers and Committee Members over the past 88 years.

We take this opportunity to say a warm thank you to our printers, the Caxton & Holmesdale Press of Sevenoaks, who have served us well over many years and have been specially cooperative over the production of this centenary number, which is over twice the normal size.

Last, but not least, we are very grateful to the following bodies who have generously contributed to the additional cost of this special number:—

The Royal Society
The British Ornithologists' Union.
The Mount Trust

February 1980 Peter Hogg.

A short history of the Club and its Bulletin

by the Hon. Secretary, R. E. F. Peal

THE CLUB

After the Annual General Meeting of the British Ornithologists' Union held on 18 May 1892 had concluded its business, a proposition was made that an Ornithological Club should be formed to hold monthly meetings at which papers should be read and specimens exhibited. A committee of the Earl of Gainsborough, Henry Seebohm, Howard Saunders, E. Bidwell and Dr. R. Bowdler Sharpe was appointed to consider the advisability of carrying out the proposed scheme. The committee probably never met but its members discussed informally the proposals, which were entirely the concept of Bowdler Sharpe (Senior Assistant in charge of the bird Collection of the Natural History Museum), and they supported them. On 5 October 1892, 15 B.O.U. Members and 4 guests met at the Mona Hotel in Henrietta Street, Covent Garden, Dr. P. L. Sclater, F.R.S. being placed in the Chair, for the Inaugural Meeting of the British Ornithologists' Club. At this Meeting the Rules of the Club were proposed and adopted. It was to consist of members of the Union, who could become Members of the Club by signifying the wish to do so and paying the subscription of 5*s.* an annual session. Meetings were to be held on the third Wednesday in every month from October to June and at them papers upon ornithological subjects were to be read, specimens exhibited and discussion invited. An abstract of the proceedings should be printed as soon as possible after each Meeting, under the title "Bulletin of the British Ornithologists' Club" to be distributed gratis to every Member and sold at a price of 1*s.* each by the publisher, Mr. R. H. Porter. Affairs were to be managed by a Committee of 3 Members (to be elected annually, one to be changed each year) together with the Editor of the *Ibis* (Dr. P. L. Sclater), the Editor of the *Bulletin* and the Secretary and Treasurer *ex-officio*. Bowdler Sharpe was appointed Editor and Howard Saunders Secretary and Treasurer. The Meeting continued with Edward Degen reading a paper "On some of the main features in the evolution of the bird's wing", illustrated by diagrams and specimens and followed by a discussion. The time of the Meeting is not stated but it was no lightweight start to the Club as Degen's paper was printed, after editing by W. P. Pycraft in the absence of the author in Australia, as Vol. II of the "Bulletin", there occupying 28 pages.

The next Meeting, held a fortnight later at the same place, was described as "The first regular meeting of the Club" and it is from that one that subsequent Meetings have been numbered: by then there were 60 Members. Of the 4 new species from the Borneo area described there by Bowdler Sharpe, in the Club's first taxonomic business, only one has been reduced in Peters to a sub-species.

Meetings were held monthly from October to June (apart from sessions 1940-45) until 1955, when a Meeting in September replaced the June one. In 1967 and in 1968 Meetings were reduced to 8 by the elimination of the May Meeting and since then Meetings have normally been held in alternate months. The third Wednesday in the month was changed to the second in December 1910, back to the third in October 1945 to suit the hotel and to the third Tuesday in May 1953, although there is now more flexibility in dates than previously.

P. L. Sclater was Chairman at every Meeting except one which he attended and he was elected almost annually from 1896 until his death in 1913. However, up to 1912 it was *ex officio* as *Ibis* editor that he sat on the Committee and the first provision in the Rules for a Chairman was in August 1913. Then a change in the Rules provided for a Chairman to be elected for a 5 year term and then ineligible for immediate re-election (though in fact W. L. Sclater, elected in 1918 for 5 years, served 6), and in 1924 the term was reduced to 3 years. Vice-Chairmen can be traced in most years from 1896 to 1922, always persons serving on the Committee in another capacity, occassionally one but usually two. The first authority for them in the Rules was in 1930, when one was to be elected annually for one year and then ineligible for immediate re-election. In 1938 the number was raised to 2 and in 1949 it became one again and the term increased to 3 years. In 1919 the *Ibis* editor or joint editors ceased to serve on the Club committee and the election of the *Bulletin* editor was for a 5 year term with a ban on immediate re-election, which in 1957 was expressly waived in the case of Dr. J. G. Harrison and has since been removed. The offices of Secretary and Treasurer were separated in 1935.

The Committee Minute Books from October 1904 are still held. The first, which lasted until June 1915, was a pocket-sized limp-covered notebook costing 2*d.* in which 79 pages were used. The Treasurer's book 1902-1915 (cost 1*s.* 3*d.*) is held, as are manuscript acccounts for the years 1919-1921, and from 1923/24 the Annual Accounts have been published in the *Bulletin* (except for 1968-1971, when they were printed but not included in the *Bulletin*).

The original Rules did not state who should authorize changes in the Rules and elect the officers and members of the Committee and up to 1900 these functions were performed at Club meetings by the Members. However by 1904 the Committee had assumed these powers and so continued until they decided in November 1915 that General Meetings of Members should be called to exercise them and that also a Balance Sheet and Report should be presented annually to a General Meeting. The General Meetings in 1916, 1917 and 1918 were described as the First, Second and Third Annual General Meetings though when the custom of numbering them was recommenced in 1951 they were numbered from the beginning of the Club. At General Meetings in January and February 1950 the Rules were altered to permit Associate Members, to which representatives of the B.O.U. had agreed. These had to be introduced by two Club Members and elected by the Committee; conditions were otherwise the same as for Members, except that they were not allowed to vote, serve on the Committee or receive the *Bulletin* gratis.

By the closing Meeting of the first session, in June 1893, 85 of the 200 B.O.U. members resident in the U.K., including nearly all the working members, had joined the Club and paid their subscriptions, among them 7 Fellows of the Royal Society. At the same Meeting W. R. Ogilvie Grant recounted a successful expedition to Banffshire to obtain the nest of the Snow Bunting and the Dotterel, which were shortly to be exhibited in the British Museum. Mr. F. D. Godman had indicated to him so well their probable breeding places that he had obtained the nests on the first day of his expedition.

The second session had its share of nomenclature with 8 new genera and 46 new forms; membership rose to 102 and an entrance fee of 5*s.* was added to the Rules, from which it was raised to £1 in 1906. At the opening Meeting the Chairman, Dr. P. L. Sclater, gave an Address reported *verbatim* and this practice was followed almost every year up to 1941. The subjects usually covered were expeditions, other current ornithological work and new publications, but other topics were often included. Thus in 1894 Dr. Sclater suggested that ornithologists seeking places to explore should try the interior of Asiatic Turkey, particularly the Upper Euphrates, in the Palaearctic and, for a winter in the West Indies, Margarita, an island off Venezuela "a healthy place, easy of access and well provided with birds". A more adventurous explorer who did not fear Africa, might visit "the Upper Senegal River and the elevated land between that and the Upper Niger River, over which the *pax Gallica* is now said to prevail". A year later he proposed Tripoli and Arabia Felix as shorter excursions which might be accomplished in a winter's travel. In 1898 he mentioned that the newly completed Catalogue of Birds in the British Museum, listing all known species, had 11,614 species, 2,255 genera and 124 families, since when there has been an appreciable sinking or lumping of species, perhaps of genera, and an increase in families. In 1901 he had been to Turkey and "The Turkish Government, as was well known, did not recognise Science of any kind and there was nothing in the shape of a museum at Constantinople except a collection of antiquities". Then in 1903 he hoped a B.O.U. Member might explore scientifically "Upper Nigeria and those shores of Lake Tsad lately come under British sway hardly yet touched on by the ornithologist". Four years later he told of W. Goodfellow having collected in Formosa the Mikado Pheasant, of remarkable interest "although, as yet, we have only caught its tail" and of the adventurous journey from Lake Chad to the Upper Nile of Boyd Alexander.

In June 1894, under a change in the Rules, no B.O.U. Member might attend a meeting as a Visitor unless his usual residence were outside the U.K. Also a Club Member introducing a guest had to pay 1*s.* to the Treasurer, and the *Bulletin* was to be sent gratis only to Members who had paid their subscriptions. By 1896 the 1*s.* charge was in abeyance, thanks to the prosperous condition of the Club, and in April 1898 it was abolished for all except B.O.U. members, whom Members were then permitted to bring as guests, the 1*s.* being paid whether the visiting B.O.U. member came to dinner or to the meeting after. In fact B.O.U. members seem to have been rare Visitors, because in the period 1902-1915 the accounts show 1*s.* paid for a Visitor only once.

In the 19th century, Meetings were largely occupied with exhibition of skins, descriptions of new forms and taxonomic discussion but by the 20th some changes were beginning. In January 1900 the Meeting was mostly devoted to lantern slides of 9 Members and friends, including Cherry Kearton. After this, lantern evenings, held annually, were very popular Meetings. In March 1905, however, too much was attempted: after 4 new South American species had been described and 2 other Members had exhibited specimens, slides of W. Eagle Clarke, Dr. E. A. Wilson and 9 others were shown, so that there was no time for R. B. Lodge, who had been specially invited as a guest of the Club, to exhibit some of his slides, it being 11.30 p.m. In 1911, slides in natural colours taken on Lumière autochrome plates by Dr. F. G. Penrose earned high praise; exposures were generally 3-6 seconds, and two were of the Kingfisher.

In April 1900, the B.O.U. Annual Meeting having been fixed by mistake for the day of the Club's May Meeting, the two committees arranged that the usual annual dinner of the B.O.U. should not be held but that those B.O.U. members not Club Members would be invited to the dinner of the B.O.C. at 7 p.m. that day as Honorary Members and to attend the Club Meeting at 8.30 p.m. This set a precendent for joint dinners followed by Club Meetings to which all B.O.U. members were invited.

Collingwood Ingram, now senior Member of the Club and in his 100th year, is first mentioned in December 1901, when a specimen sent by him of a Scops Owl, caught alive in Broadstairs in 1898, was exhibited.

In February 1903 a letter was received from the Rev. F. C. R. Jourdain, describing the critical condition of Kites in Wales. A Kite Committee of 6 was appointed to preserve the Kite in Wales and £47 was subscribed in the room to enable it to prosecute its object. At least once more the hat was passed around at a Meeting and the final report, made in 1918 by E. G. B. Meade-Waldo, Secretary of the Kite Fund since 1905, stated that numbers had been down to 4 or 5 adults in 1905, but had then slowly increased.

It was in October 1904 that Dr. F. G. Penrose suggested collecting further data on bird migration in the U.K. and in December a (sub-)committee of 6 was appointed. A month later its proposals were adopted. These included arranging for as many as possible reliable observers in England and Wales to complete special schedules, to be sent in weekly, for 30 migratory species nesting fairly commonly in these countries (which included the Wryneck, now probably extinct as a regular breeder here): also for lighthouse and lightship keepers to complete schedules and send in wings and legs of killed birds. Thus began a massive study. The report for 1905, covering observations from mid-March to 4 June, with over 15,000 records and 350 wings received, was published in February 1906 as a special Volume of the *Bulletin* of 127 pages. The number of species covered rose to 35, and in 1906 work began also on autumn migration, the results being published with those of the subsequent spring. Reports included species accounts, and, in diary form, species freshly arrived and the weather within 40°N — 60°N and 10°E — 10°W. Reports increased in size to a maximum of 347 pages a Volume and sold at 6*s.* each, the Committee receiving from the Club a series of grants totalling £95 but otherwise being not only financially self-supporting but paying a surplus of £40 to the Club Treasurer in 1934. The plan was to publish a Volume summarizing the work, in which conclusions could be drawn, after the 10th Report. Unhappily the ninth Report for spring 1913 and autumn 1912 was the last because of the outbreak of war and no survey of these Reports has ever been made. Penrose and N. F. Ticehurst served on the Committee throughout and J. L. Bonhote, C. B. Ticehurst and C. B. Rickett for most of the years.

Another venture was the collection of migrants in China. In October 1910 it was agreed to advance J. D. La Touche, a Member living at Chin Kiang, up to £25 (or more if essential) for a spring migration expedition, the results to be first published in the *Bulletin* and the collection to be the property of the Club Committee, La Touche to have first refusal of duplicates at cost price. He went to Shaweishan, a rocky islet with a lighthouse 30 miles E. of the Yangtsze kiang, collected 428 skins of 136 species and had a 37 page report in the *Bulletin*. The British Museum paid £20 for 200 skins and Rothschild was offered the rest, receipts totalling £44 16*s*. La Touche was then sent £17 10*s*. plus £15 from the British Museum for the expenses of another similar expedition, which I have not traced, but in October 1914 the Club received a further £21 14*s*. "from the La Touche duplicate sale".

In 1913 a Club visit to Selbourne was arranged, including a visit to the garden of the "Wakes", lunch, a short paper to be read, a drive round Woolmer Forest and tea, in connection with the Club's 21st Anniversary. Also in this connection a silver Ibis on a globe and an album of the Members' signatures were presented at the Meeting on 11 June to W. L. Sclater acting on behalf of his father P. L. Sclater, who was unable to attend owing to injuries in a carriage accident, from which he died 16 days later. In April 1919 W. L. Sclater suggested a Club visit to Selbourne on 12 July, the visit planned for exactly 6 years earlier having been cancelled on the death, just before, of P. L. Sclater, but there is no evidence that the 1919 visit took place either.

Ladies could not originally join the Club because the B.O.U. did not admit them as members and there was an unwritten law against their introduction as Visitors. In March 1909 Members voted almost unanimously in favour of ladies being admitted to the lantern-slide exhibition after dinner the next month but the Committee rejected this proposal, as the room booked was too small. A year later a proposal that ladies be admitted as guests on the lantern evening was rejected by the Committee who changed the Rules, restricting Club Membership to *ordinary* members of the B.O.U., thereby keeping out the Hon. Lady Members newly created by the B.O.U. However at the Meeting on 15 March 1911 Miss E. L. Turner is shown as a Visitor — one hopes she was allowed at the dinner first but that is not stated. She showed 34 slides and her presence must have been arranged well in advance; she came again in March 1912 and ladies were to be allowed to come on the Selbourne visit in 1913. In 1916 at the B.O.U. A.G.M. in March a resolution was carried "That ladies be admitted to Ordinary Membership of the B.O.U.". However the Club in October that year passed changes to the Rules about restricting Club membership to ordinary *male* members of the B.O.U. but allowing lady B.O.U. members to attend the annual combined dinner (yet the reprinted Rules did not incorporate any such changes). Then in 1921 the Committee proposed to the A.G.M. that the Rules should restrict membership to ordinary *gentlemen* members of the B.O.U.; however, the A.G.M. voted 15 — 3 with many abstentions that all members of the B.O.U. be eligible for Club membership but, perversely, ladies were not to be admitted as guests and it was not until 1928 that this anomaly was removed.

In 1914/15, on the proposal of Dr. D. A. Bannerman, it was decided to hold discussions on subjects of general ornithological interest at not more than 3 Meetings a year, the two that year being on "Coloration as a Factor in Family and Generic Differentiation" and "The effect of Environment on the Evolution of Species", opened by P. R. Lowe and Lord Rothschild respectively, and printed *verbatim* in the *Bulletin.* At the 1918 A.G.M., Jourdain, newly elected to the Committee, asked for more fresh blood on the Committee, and a gradual move away from taxonomy as the almost exclusive interest of the Club ensued. By 1928 the Committee discussed making Meetings more interesting with more invited speakers.

The only menu of any age preserved in the records is of the dinner, held jointly with the B.O.U., in March 1939, and reproduced on our cover, which shows the ability of Members and guests to enjoy a substantial evening of ornithology.

Financial problems did not worry the Club up to 1914. No figures are available before 1902, when a credit balance of £30 was brought forward and from then to 1914 the Club was able to keep more or less level overall. Membership rose gradually to just over 200 and likewise annual attendances at Meetings, with a peak of 468 in 1911/12. By 1917-18 attendances were down to 224 then rose gently for a decade and kept steady until 1939, with a peak of 605 in 1934/35 (193 of them at the Meeting following the joint dinner with the B.O.U.). The subscription was raised to 7*s.* 6*d.* a year in 1915 because of the Migration Committee activities, larger *Bulletins* owing to the *verbatim* reports of discussions and because it was hoped to publish a new General Index to the *Bulletin.* The production of the Index to Vols. XVI—XXXIX (1906-1919) strained the finances however, with liabilities thought to be greater than assets, so the subscription was raised to one guinea a year in 1921. This proved more than sufficient to pay off debts and there followed a period of over 25 years of generally rising surplus in the accounts, of making donations and the production of another General Index to the *Bulletin.* In 1922 the Club voted £12 10*s.* (and the B.O.U. £10) to enable the Aves section of the Zoological Record to be completed, in 1931 the Club gave £22 10*s.* (the B.O.U. had ceased to pay), and continued to donate every year except one up to 1970. Sums were given to the B.T.O. in 1933 and 1934, in 1937 towards the expenses of David Lack in visiting the Galapagos Islands, towards Kite Protection in Wales in 1938, and the 8th I.O.C. was given £100 in 1934 plus £50 in 1939 for printing the Proceedings. From 1920-1939 the Membership remained in the range 160-190.

During 1940-45 Meetings were reduced to a maximum of 5 a year and most had to be held in the afternoon, after a lunch except during part of 1941/2 when public luncheons were banned.

In 1943, the Hon. Secretary, N. B. Kinnear, was elected President of the B.O.U. and his office assumed by the Editor. This continued for the next 4 years. Membership only fell to 123 in the War years, but the attendance figure, at 109, was the lowest ever in 1942/43, and the Committe met just 4 times between September 1939 and May 1945. Membership grew gently up to 257 in 1961, after which there is a gap until 1972, when there were about 225, from which it has risen to the present 309. Attendances recovered immediately the war ended in 1945 and the highest thereafter was 600 in 1952 (including 222 at 2 meetings held jointly with the B.O.U.). Attendances fell gradually to 128 in 1969, since when they have risen again, with 243 last year.

In 1950 printing costs per page had doubled in 2 years, strict economies were made and the Club was recognised by the tax authorities as a charitable body. For 1963, by which time printing costs had started more or less annual increases, the subscription was increased to £1 10*s*. Since then it has been a matter of ever-increasing printing costs pushing up subscription rates, though a somewhat rising circulation has slightly cushioned the latter. In 1961 Members with 50 years unbroken membership of the Club became entitled to life membership free of subscription and there are now 6 of these.

In 1959 and 1960 sub-committees of the Club and the B.O.U. discussed their meetings, as the B.O.U. was considering holding its A.G.M.s outside London. At the Union's request, it was decided in September 1960 that no more Associate Members would be elected, the entrance fee be abolished and that B.O.U. members be allowed to come to one Club meeting a year free of charge; on their part the B.O.U., who had in mind only one meeting a year in London, were considering giving the Club help over secretarial work, publicity and encouragement to join the Club.

The Club was bequeathed £1,000 by F. J. F. Barrington in 1956 and his house at Tring in trust by Herbert Stevens in 1964, benefactions which are of very great value to the Club. In 1969 Mrs. B. P. Hall earned the thanks of the Club by presenting funds for purchase of an excellent portable projector. In April 1951 Col. R. Meinertzhagen (connected with the Club since 1901 and a Member since 1918) presented the Club with a gavel of carved walnut, in which his Godman-Salvin Medal was placed, with a Siberian Cross given him by Seebohm.

THE BULLETIN

The purpose of the Club, as first published (in the Preface to Vol. I of the *Bulletin*) was to give members of the B.O.U. an opportunity of meeting more than the customary once a year. However, printing of an abstract of the proceedings as soon as possible after each Meeting was required by the Rules. The presence of the Editor of *Ibis* as well as the Editor of the *Bulletin ex officio* on the Committee showed the particular importance attached to the *Bulletin*. It would appear that publication of the *Bulletin* was a vital purpose in the foundation of the Club so that there might be a publication in which new forms or new names could be published speedily, obviating the danger of losing priority in nomenclature. Thus at the first regular Meeting, the report of which was published in the *Bulletin* less than a fortnight later, Bowdler Sharpe named 5 new species and 11 more were described by others present, with a total of 58 new species and 25 new or amended generic names in Vol. I. The *Bulletin* (except the notice of the next Meeting) was reprinted soon after in *Ibis* until No. XLVI of 30 June 1897 and then, with the exception also of the names of those present at each Meeting, up to No. LXXIII of 3 July 1900. Vols. II and IX, which did not contain reports of Meetings, were not reprinted in *Ibis*.

Vol. I of 10 numbers covered the first session, from October 1892 to June 1893, since when a volume has been published every session, in addition to which there have been 12 special volumes. The first special volume, consisting of the paper read at the inaugural Meeting, was Vol. II published in 1894. The cost of it (£25) was defrayed by a Mr. J. P. Gassiot, F.Z.S. "on Dr. Sclater's suggestion" and he was presented with Vols. I—III of the *Bulletin* in thanks. In April 1899 an "Alphabetical Index to the Genera" adopted in the Catalogue of Birds in the British Museum was issued as Vol. IX of the *Bulletin*. The 9 Migration Reports were published as separate volumes of the *Bulletin*, that for spring 1905 in February 1906 being Vol. XVII, for spring 1906 being Vol. XX and then the even numbered Vols. up to Vol. XXXIV which was published in December 1914 carrying the Report for spring 1913 and autumn 1912 migrations. Vol. XVIII (1906) comprised the Index to the *Bulletin* Vols. I—XV (1892—1905) which cost £53 to produce (of which all except £9 had been recouped 6 years after). In 1920 the publishers still had 90 bound copies but none are now held. The Index to the *Bulletin* Vols. XVI—XXXIX (1906—1919) was published in 1920: for this the Minute Book records that the compiler was to be paid "36*s.* per volume, and as there were 14 volumes, this would amount to 25 guineas (£27 6*s.*)" — a somewhat curious calculation. In fact it proved a longer job and he was paid a round £30. The Index to the *Bulletin* Vols. XL—LI (1919—1931) was published in 1932 and a Scientific Index to the *Bulletin* 1950—1959 in 1963. The Indices published in 1920, 1932 and 1963 were not issued as part of any *Bulletin* volume. In 1947 a General Index to Vols. LII—LXIII (1931—1943) was prepared at a charge of £50 but, faced with an estimate of £250 for printing 300 copies, it was decided not to print it but to send it to Tring Museum.

At the first and second regular Meetings all descriptions of new forms were in Latin, but later in the first session the Hon. Walter Rothschild and Dr. E. Hartert sometimes used English, particularly for longer descriptions (cf. *Auk* Vol. I, 1884, in which 13 new forms are described in English, one in Latin) and Latin was in use up to Vol. XXIII (1908/09) and, on occasion, for at least another 30 years.

The *Bulletin* always began with the names of those present at Meetings and this custom continued until Vol. 71(4) when it was discontinued as an economy, but was brought back in 99(1), as it was found that names added materially to its reference value. In Vol. VI the Chairman's Address was for the first time reported *in extenso* in the *Bulletin* report of the Meeting at which it was given instead of being issued separately afterwards, the practice continuing as long as Chairmen have given an address. The preliminary pages in Vol. I contained a Preface, the Rules, List of Members and List of Authors to which was added a list of Committee members in Vol. III, a list of officers, past and present, appearing from Vol. XLIV (1923-24) and this continued normal practice until Vol. 68. Since then the Rules have only been in 3 times (last in Vol. 79) and the officers past and present up to Vol. 89 and in Vol. 95 (1975). The latter are included in the Index for Vol. 99 circulated with this issue. A list of changes in membership has replaced the List of Members but the B.O.U. has kindly shown Club Members in their 1979 List of Members.

The *Bulletin* was printed by Taylor & Francis and published by R. H. Porter until 1905, when H. F. Witherby arranged for Witherby & Co. to print it and to publish it free of charge. After Vols. XVI to XVIII he asked to be relieved of the printing, which reverted to Taylor & Francis up to Vol. 68, after which H. F. & G. Witherby (publishers since 1932) took over the printing. Then in 1953 Witherbys intimated that they would be unable to continue distributing the *Bulletin* and printing of it was transferred to Caxton & Holmesdale Press, where it is happily still printed, with the October 1953 number, and the Club ceased to employ a publisher.

The text, including scientific index, was (like the preliminary pages) numbered in Roman numerals in the early volumes but in Arabic figures in Vol. IX and from Vol. XI onwards (the index has been in the preliminary pages from 1960). Up to 1947, *Bulletin* numbers and volumes were both numbered in Roman figures (to the irritation of those who now handle them).

A separate *Bulletin* was normally issued to report each Club Meeting up to 1972. Up to 1947 the numbers of the *Bulletin*, except for the 12 special volumes, were numbered in a continuous series, as have been Club Meetings, but by the time this system of pairing numbers ceased they had diverged by five, *Bulletin* No. CCCCLXXIV reporting the 469th Meeting. The discrepancy, which puzzles every historian and student in turn, arose as follows:—

Bulletin	
No. II	Nov 1892. Meetings numbered from first regular meeting (which was the second meeting).
CLVII	Feb. 1910. January 1910 meeting cancelled, contained obituary of Bowdler Sharpe.
CXC	Oct 1913. Guide to Selbourne (prepared for Club visit to Selbourne).
CCLXXIII	Jan. 1923. Proceedings of 12th Oological dinner.
CCCVI, CCCVII	July 1926. A single issue given 2 serial numbers but reporting only the June 1926 Meeting, the Meeting on 12 May 1926 having been cancelled (General Strike).
CCCCXLVI	Mar 1943. No meeting because of wartime accommodation difficulties.
CCCCLI	Mar 1944. No meeting because of wartime accommodation difficulties.
CCCCLXXI	Apr 1947. Reported meetings 464 and 465 due to printing restrictions caused by fuel crisis.
CCCCLXXII	May 1947. Reported meetings 466 and 467.

The report of Meeting 466, which followed the B.O.U. Annual Meeting and dinner, is unusual: after mentioning the numbers attending it but with no list of names, it reads "No scientific business was transacted".

From 1947/48 until 1968 there were 9 numbers of the *Bulletin* each year with 2 exceptions. In 1948/49, Vol. 69 contained 12 issues and covered 16 months, so that from then the Club's year was the calendar year; Vol. 71 had only 8 numbers (which still causes some confusion). There were 6 numbers a year from 1969-1972 (Vols. 89 to 92), since when there have been four (but Vols. 92(3) and 92(4) were published in one as a double number). In 1950, Vol. 70(6) had to be reprinted owing to a transposition of pages and the corrected copy starts page 40 with *Cercomela sinuata*; Vol. 70(8) had also to be reprinted and the amended copy has the publication date 15 December 1950. In 1952, with Vol. 72, a cover was added, the familiar green paper one with an Ibis drawn by D. M. Henry. Vol. 71(1) and 72(8) contain a short history and interesting reminiscences of the Club by Sir Philip Manson-Bahr, Chairman.

The text of the *Bulletin* was 67 pages in Vol. 1 and in sessional volumes reached 171 by 1911/12, peaking at 267 in Vol. LIII (1932/3). In 1914 the Rules were changed so that the Bulletin might contain descriptons of new species, although not communicated at a Meeting. It was decided in 1919 that the Oological sub-section reports, up to 12 pages, could be printed in the *Bulletin* for 1 year and this arrangement was renewed in January 1921.

However following heated criticism by Earl Buxton at a R.S.P.B. meeting of large series of clutches exhibited at Oological Dinners and reported in the *Bulletin*, the Committee, who wished to limit the collecting of eggs of birds, where they were rare or collected in excessive numbers, felt in April 1922 that they could no longer publish in the *Bulletin* proceedings of the Oological Dinners over which they had no control nor responsibilities.

In 1905/6 the Club sold a set of the *Bulletin* (Vols. I - XV) to the Natural History Museum for £4 3*s*. and the next year a set to the Bodleian Library for £4 9*s*. with the Linnean Society buying Vols. I-XIII (not now held by them). The free list then included 14 eminent overseas ornithologists, but in June 1915 this was reduced to 9, including 2 in Germany (Reichenow and Schalow). Likewise the 5 Japanese Members in 1941 remained on the membership list until after 1945, although communication with them cannot have been possible.

The number of non-members subscribing to the *Bulletin* has increased from a few early in the century to 53 in 1950 and 146 in 1979, and work to increase the number of subscribers continues; the larger the circulation, the more pages a year it is possible to finance.

The *Bulletin* had a strong emphasis on descriptions of new forms and the status of known forms, although in the editorship of Dr. Low (1930-35 and 1940-45) a more narrative style can be seen. When Dr. J. G. Harrison became Editor in 1952 he had to set about inviting contributions from scientific ornithologists who did not attend Meetings, as the Committee was requiring larger numbers (whilst very careful over costs), so that the *Bulletin* covered, as well as taxonomics, plumage variants, functional anatomy, pathology and some field ornithology. The broadening of scope has continued and in 1978, of 39 main papers, 16 were on field observations and 14 on taxonomics. Editorship of the *Bulletin* has never been easy, because it has generally had to be published within about a fortnight of the Meeting covered; but this problem no longer remains since publication is quarterly and unrelated to Meetings.

As a measure of the standing of the Club and the *Bulletin*, of the 14 Presidents of International Ornithological Congresses this century, all but 2 have have been Club Members or attended Meetings as guests and 9 have been authors in the *Bulletin*.

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REMINISCENCES

Some memories of the B.O.C. sixty years ago

by H. G. Alexander

I joined the British Ornithologists' Union in 1911 and during the first years of my membership, as my home was at Tunbridge Wells and while I was up at Cambridge, I attended Club meetings fairly often. Later, as I did not live near London, my attendance became much less frequent. Recollection of what happened in those far away days is naturally very patchy, so what follows merely recalls a few things that happen to have stuck in my memory after all these years.

The first few meetings that I attended were still presided over by Philip Lutley Sclater, aged about 90, the one active survivor of the founders of the Union. I cannot recall that he made any special interventions, so I gained no impression of him as a man or as an ornithologist. He was obviously very old, and when there was a row he feebly called out "order, order", with no visible effect. The row often was the well known altercation between Percy Bunyard and F. C. R. Jourdain. Both of these men were egg-collectors, and at that time, as there was no separate Oologists Club, they brought their latest specimens of rare eggs to exhibit at the B.O.C. dinner. Bunyard got his eggs through professional collectors, and at one meeting he produced whathe claimed to be a clutch of Hobby *Falco subbuteo* eggs from Ireland. Jourdain challenged his identification of the eggs and declared that it was often impossible to separate Kestrel *F. tinnunculus* and Hobby eggs. I think Jourdain brought some of each species to the next meeting and challenged Bunyard to distinguish them, which no doubt Bunyard failed to do. Bunyard was deaf, so he had difficulty in hearing what Jourdain was saying. Such "rows" were not very edifying, and no doubt they were rare.

Walter (later Lord) Rothschild succeeded P. L. Sclater as chairman and was both efficient and benevolent. He and Dr. Ernst Hartert often had specimens of some new bird to show, lately received by the Tring Museum. I recall that at one time Rothschild was giving special attention to the Cassowary family, so several of these huge bird-skins were handed round whilst he discoursed about them.

Of the active members who were usually present, I recall E. G. B. Meade-Waldo, who lived at Edenbridge, and invited me to come over from Tunbridge Wells to visit him; H. W. Richmond, a mathematics don at Kings, my own college, Cambridge; Admiral Hubert Lynes, who was working on the African cisticolas and probably told us about his work; H. F. Witherby, who had recently started his magazine, *British Birds*, and whom I already knew; and my uncle, H. M. Wallis of Reading. There were two men with special knowledge of Australian birds; G. M. Mathews, who was also working on oceanic birds, and Tom Iredale. Occasionally some member would report some rare bird observed in Britain, and in such cases Charles Oldham, who was the expert, would give his views of field identification. As far as I recall, the Ticehurst brothers, Norman and Claud, were not often at B.O.C. dinners. No doubt I have omitted several of the active members who brought specimens or made communications. Indeed I have very little recollection of the detail of the proceedings: my memory is of a very pleasant small club, attendance ranging around 20, I think, largely informal and with no set address. If you had some communication to offer, you advised the Secretary in advance. That was all.

The only time I spoke to the Club in those early days was to record a Siberian Chiffchaff *Phylloscopus collybita tristis* which I had been watching in a sheltered valley in west Kent, and which 2 or 3 other ornithologists had also watched. H. M. Wallis urged me to record it at the B.O.C. dinner and Gregory Mathews suggested that it should be shot for definite identification; but the chairman, Walter Rothschild, intervened to say that those that had seen it did not want it to be shot. This incident no doubt is trivial enough, but it perhaps illustrates how different a body the B.O.C. was in 1913 from the present day. Some 10 years later, when H. F. Witherby was bringing up the subject of the status of the Willow Tit *Parus montanus* in Britain—some leading British ornithologists still expressed scepticism about its identity—B. W. Tucker and I both gave our reports on its field identification and behaviour; but I was rarely able to attend the meetings in the twenties, in those early days of the development of field ornithology and identification.

In those benighted days there were no women members. Discussions about lady membership of the B.O.U. were taking place, but even when a few "honorary lady members" (who included Miss E. L. Turner and the Duchess of Bedford) were given membership of the B.O.U., this did not entitle them to join the B.O.C. That came much later.

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Recollections of personalities of the Club

by the late Phyllis Barclay-Smith

Miss Barclay-Smith was putting the final corrections to these reminiscences when she died after a sudden short illness at Christmas time 1979.

I became a member of the B.O.C. in 1932, and I can well remember the joint dinner of the B.O.U. and B.O.C. on 9 March 1939 in the Rembrandt Hotel, so humourously illustrated on our cover. Dr. Percy Lowe, President of the B.O.U. was in the Chair, accompanied by the elegant Mrs. Lowe. It was a brilliant occasion. There were many distinguished guests, and, as usual, everyone wore full evening dress. The Meeting of the B.O.C. which followed was held in the Lecture Hall of the Royal Geographical Society and opened with a talk on West African Birds, illustrated with lantern slides, by Léon Lippens who had come over specially from Belgium. Sadly this evening proved to be the end of an era.

My recollections consist of impressions I have retained of some of the outstanding personalities of the pre-war days, and I hope the following notes on a few of them may reflect sides of their characters perhaps little known to succeeding generations.

ERNST HARTERT

Dr. Ernst Hartert was one of the most outstanding figures in ornithology at the turn of the century. He was born in Hamburg in 1859, and became interested in natural history at an early age. As his father was a General in the Prussian Army he spent much of his youth in various garrisons, and was educated at the University of Königsberg. He met Bowdler Sharpe at the 2nd International Ornithological Congress in Budapest in 1891 and was invited to London to help work on the British Museum Catalogue of Birds, during which time Mr. Dresser took him to see Lord Rothschild. This was an historic meeting which had great influence on British ornithology, for in 1892 Lord Rothschild appointed Ernst Hartert the Curator of Birds in his museum in Tring. and the museum was to become the Mecca of ornithologists from all over the world. Dr. Hartert and his wife both became naturalised British subjects and their son was educated at Oxford. The first World War proved a time of intense sorrow for the Harterts—not only was their son killed in action in 1916 while serving in the British army, but many people shunned them.

Dr. Hartert joined the B.O.C. in 1893, and was on the Committee 1899-1902 and 1911-1913. He was awarded the highest honour of the B.O.U., the Godman-Salvin Medal, in 1929. His short stature, snow white hair and clear complexion made him a striking figure at the meetings of the Club, and when stressing a point he always pointed his forefinger downwards.

When efforts were made to restore the International Ornithological Congress it was unanimously agreed that Dr. Hartert was the only one who could pull the various nationalities together again. He was therefore elected President of the 6th International Ornithological Congress held in Copenhagen in 1926—which proved an outstanding success. It was here that I first met him and from then on he and his wife treated me as an adopted daughter. They lived in a pleasant house at Tring within 5 minutes of the Museum, and often on Sundays I travelled by the very slow stopping train from London to visit them. Dr. Hartert met me at the station, and we went to Tring Reservoirs in the morning, and spent the afternoon looking at skins in his room at the Museum. Sometimes Lord Rothschild would join in and Hartert would growl "He reads all my letters". Hartert was a perfectionist and all his work was meticulously thorough. Phyllis Thomas, the Secretary to Lord Rothschild and to Dr. Hartert, kept the library, and everything else, in impeccable order. She once told me that when there was a great deal of Italian literature, Dr. Hartert had said "Now you will learn Italian" and this she did.

Dr. Hartert's last expedition was in 1930 to North Africa, accompanied by the Marquess Hachisuka, but he became ill and had to return. He was advised to retire and that year he left Tring for Berlin, where he was given accommodation to continue his work in the Zoological Museum. Professor Stresemann told me that when the collection at Tring was sold to America, Hartert came into his office with tears in his eyes. I visited the Hartert's every year and in 1933 when the Annual Meeting of the Deutsche Ornithologen-Gesellschaft (D.O.G.) was being held on 30 September in Königsberg, he asked me to go with him. As he refused to cross the Polish corridor we went by boat to Pillau. From 1879-1882 his father was Commandant at Pillau, where he had a large official house with a wonderful view of the sea, dunes and harbour. In this Hartert had been allowed a room for his bird studies and collections, and as the house was still extant we looked through the windows at the room in which he had spent so many happy hours. In his youth, in order to increase his pocket money he shot and set up mammals which he sold to the keeper of the Inn "Zum Eltis", on the edge of the harbour. We naturally visited the Inn and Dr. Hartert was certain that a marten he had stuffed would still be in existence. He did not find it easily, but finally he took a chair, clambered onto it, and on a high shelf to his great joy found his marten. Following a three day meeting in Königsberg, an excursion was made to Rossitten on the Kurische Nehrung and to his great pleasure he again visited the 'Tummelplätze'. On our return to Königsberg on 6 October we had some hours to spare before leaving for Berlin and I suggested he might like to visit the Museum again, but he very firmly replied: "Certainly not, I would like to go to a movie".

At a meeting of the Council of the D.O.G. on 6 November, Dr. Hartert was elected a new Honorary President, but he was suddenly taken ill again and died on 11 November 1933. He had not visited Pillau and Königsberg for 50 years, and it seemed that his life had gone a full circle.

Lord Rothschild

Walter Rothschild, a member of the wealthy international banking family, and his brother Nathaniel, were the first of that family to be interested in natural history, Walter chiefly in ornithology and his brother in entomology.

The establishment of a private museum for natural history on the scale of the Tring Museum, except for the Alexander Koenig Museum in Bonn, is probably without parallel. When Ernst Hartert was brought to Tring by Mr. Dresser in 1892 Lord Rothschild realised the potentialities of this outstanding young ornithologist in appointing him Curator of Birds of the museum. With the meticulous scientific approach and thoroughness of Ernst Hartert and the drive, imagination and wealth of Lord Rothschild an invaluable partnership was formed. Many collecting expeditions were made, a long series of standard works and other publications were produced, and sensational advances in ornithology were achieved.

Lord Rothschild was President of the B.O.U. 1923-28 and was of great support to the B.O.C., being Chairman 1913-18 and Vice-Chairman 1930-31. He made many contributions to the meetings, perhaps the most striking when, as reported in the *Bulletin*, he exhibited a full-sized model of the Moa *Dinornis maximus* Owen, together with a drawing of the Moa feathers and a photograph of a cast of the skeleton in the Royal College of Surgeons. He explained that the height, 9 ft. 4 inches, and the other dimensions were taken from the cast and feathering constructed from the actual feathers in the British Museum collection, while its shape was modelled from the skeleton combined with impressions suggested by *Apteryx* and the Emu. Mr. W. P. Pycraft expressed his keen appreciation of this restoration, remarking that Lord Rothschild had added the keystone to the work began by Owen. Philip Manson Bahr, giving a short history of the Club in 1951, related that Lord Rothschild arrived with his model in an open taxi much to the amazement of a gaping crowd which collected at the entrance to Pagani's.

Up till 1933 the meetings were held at Pagani's—a somewhat sleezy Italian restaurant where even the waiters' coats were stained with grease and the food abominable. Story has it that Lord Rothschild made no complaints but secretly ordered a special menu for himself, as he averred he was on a diet.

The following extracts from Jean Delacour's autobiography give some idea of Lord Rothschild's character: "Whenever I returned from a collecting trip my material was unpacked at the British Museum, which was the most convenient place for me to study birds, and Lord Rothschild would be there in large flowing morning coat. When treasures appeared from the cases, either something that was new, or something he did not possess he would whisper in my ear "May I have one?". I gave him a specimen whenever I could spare it and it quickly disappeared in a deep pocket of the morning coat; he would be as pleased as a child." Jean Delacour also relates an incident when Lord Rothschild visited him at Clères:— "It was in July, and many rare chicks had been hatched that year. There were, in particular, a few Bronze-tailed Peacock-pheasants, a rare Sumatran species. Lord Rothschild's curiosity was awakened as keenly as ever; he had to see those, so far, unknown chicks. "We have to walk a mile uphill", I said, "as there is no road to their rearing place". That did not matter, he would walk, which he did rather painfully. When we arrived, out of breath, I called the keeper in charge and asked him where the chicks were. "They have been moved to the other field, on the opposite hill" he said. "Poor Rothschild! But he was not beaten—down we went and up again. He finally saw the little black objects; he was tired, but perfectly satisfied".

Though chiefly concerned with the collection of specimens, Lord Rothschild was also interested in conservation, to which he gave much support. In these days when there is so much emphasis on threatened species it is significant that Walter Rothschild was the first to produce a book on extinct birds.

P. R. LOWE

Like so many of the ornithologists of that epoch, Percy Lowe was a medical man, emanating from Cambridge and Guys Hospital. He served as a Medical Officer in the Boer War 1899-1901 and it was during his time in South Africa that he started studying and collecting birds. After the war he was appointed as private physician to Sir Frederick Johnston, by whom he was taken for many voyages on his yacht collecting birds.

On his return from service in the R.A.M.C. in the Mediterranean and France in the 1914-18 war, Percy Lowe was appointed to succeed Ogilvie Grant in charge of the Bird Room at the Natural History Museum. His main interest was classification, anatomy, and osteology and when W. P. Pycraft retired, he took charge of the spirit and osteological collections. He was not an orthodox ornithologist and spent a great deal of time in research on anatomy, especially of Sruthious birds, about which he wrote many papers. He retired from the Museum in 1935 but was allotted a room in which to continue his researches.

He played a great part in bird preservation and was one of the members of the inaugural meeting of the International Committee (now Council) for Bird Preservation held in London in 1922, but it is with the preservation of wildfowl that his name is most closely associated. He co-operated with Professor Einar Lönnberg of Sweden in 1925 in drawing attention to the serious situation of the stocks of wildfowl in Europe and was ceaseless in his efforts to gather accurate information and secure more effective preservation. In 1927 he succeeded in bringing about an international Governmental Conference to consider the whole question of wildfowl, which was held at the Foreign Office in London. I remember him saying: "I want to see the whole skies black with duck", but he was determined on a scientific and practical approach on an international scale. To this end, in 1936, as Chairman of the British Section of the ICBP, he formed the Wildfowl Inquiry Committee composed of the various interests concerned. Being a keen shot himself he achieved an invaluable link in understanding and confidence between sportsmen and conservationists. This Committee secured the passing of a special Act for the Protection of Ducks and Geese in 1939, and among other successes instituted the ringing of ducks at duck-decoys to trace migrations, and initiated national and international wildfowl counts. His committee also promoted the establishment of the International Wildfowl Research Institute (now the International Waterfowl Research Bureau). It is undoubtedly in no small part due to the foresight and drive of Percy Lowe that wide conservation measures for wildfowl exist today.

Dr. Lowe joined the B.O.C. in 1907, served as Hon. Treasurer 1914-15, Editor 1920-25 and Chairman 1927-30 and was President of the B.O.U. 1938-1943. He had a charming personality and sense of humour which endeared him both to British and foreigners alike, even though at times they disagreed with his theories. His wife, a daughter of E. G. B. Meade-Waldo, took an active part in his interests and after he died in 1948 remained a member of the B.O.C. and regularly attended meetings till her death.

G. Carmichael Low

Dr. George Carmichael Low played a great part in the affairs of the Club. He was Hon. Secretary and Treasurer 1923-29, Hon. Secretary 1943-45, Vice Chairman 1938-39 and Editor of the *Bulletin* 1930-35 and 1940-45. His contributions to the *Bulletin* were constant, wide and varied. In addition, he was meticulously accurate in his editing, a characteristic which was further demonstrated in the section of *Aves* in the Centenary Volume of the Zoological Society of London 1929, for which he was responsible. Originating from Angus he always retained his strong and particularly personal accent. He was a senior physician at the Hospital for Tropical Diseases, Director of Clinical Tropical Medicine at the London School of Hygiene and Tropical Medicine, and in the First World War served as a Major in the Indian Medical Service.

He formed one of a select trio who observed birds every Sunday from the causeway at Staines Reservoir, the other two being brother Scots—W. E. Glegg, a brewer, and A. Holte Macpherson a director of Watneys Brewery. To accompany this trio was an education, but sometimes also an endurance test of the biting winds. W. E. Glegg was Hon. Secretary of the B.O.C. in 1947, but Holte Macpherson for some reason did not even join the B.O.U. Every year a party was given by Watneys to view the Boat Race, at which champagne as well as beer flowed. Holte Macpherson, an Oxford man, took this race very much to heart and when Cambridge won he always consoled himself by going on to Richmond Park in the hope of seeing the first Redstart.

At the close of the 9th International Ornithological Congress in Rouen in 1938 the majority of participants joined an expedition to the Camargue. Some remained longer, and these included the Scottish trio and myself. It was an unforgettable experience; on excursions they each carried a telescope and umbrella and there were often arguments as to where a picnic lunch should be. Carmichael Low once finally authoritatively ordered us on to what turned out to be an ant-heap.

Occasionally Dr. F. J. F. Barrington, whose bequest to the Club members will remember appreciatively, was allowed to join the party. He was a distinguished obstetrician, though he disliked women, but under his gruff exterior there was a kindly nature. He usually carried a blue mackintosh folded up into a tight roll. Though he had lost most of his teeth he would never wear his dentures, and when I asked him about this he replied "I prefer to keep them in the top drawer of my chest of drawers"—a most tragic habit, since he died from asphyxiation by a piece of meat at a Medical dinner.

It was announced on the Agenda of the meeting of the Club on 12 February 1936 that Dr. Carmichael Low would give a short description of his recent tour round the world with the British Medical Association and an account of some of the more interesting birds seen on the journey. He told us that "the trip was a wonderful one in every way and lasted from July 1934 to November 1935, over 240 species and sub-species being recorded". He showed a large number of pictures on the epidiascope and though the majority of these showed lovely girls sitting under sun-umbrellas, he was quite oblivious to the amusement he thus evoked. At the meeting on 24 October 1942 he exhibited an Andean Gull, which he explained had "survived for a little over 4 years in the London Zoo and died eventually of congestion and oedema of the lungs", adding that he had "got" the body which he proceeded to pass round on a plate.

Story has it that during the last war Dr. Low was leaving the Natural History Museum when an air-raid warning sounded, at which he promptly opened his umbrella.

SIR PHILIP MANSON-BAHR

Philip Manson-Bahr was a great personality with his burly figure, booming voice and irrepressible sense of humour. His abilities and interests covered a wide spectrum. He was a specialist in tropical medicine of international repute and among the positions he held were Director of the Clinical Division of the London School of Hygiene and Tropical Medicine, President of the Royal Society of Tropical Medicine and consulting physician to the Colonial Office and Crown Agents for the Colonies. When he practised as a consultant in Harley Street, his cheerful manner, combined with infectious confidence, was of no mean help to his patients, and many of those who returned from the tropics with some malady have said how much they owed to him.

He was a gifted artist, and even during his war service 1914-19 in Egypt and Palestine his prowess was not wasted, and he spent most of his free time in painting. Appropriately he was President of the Medical Art Society. He was also a first-rate photographer, and on 16 May 1951 when he gave a talk to the Club on reminiscences of 50 years, the slides he showed of photographs taken in 1900, without any of the modern aids, were unquestionably as good in quality as those of bird photographers today.

Philip Manson-Bahr was involved in ornithology from his undergraduate days in Cambridge when, as he has related, about the year 1900 he attended the historic Sunday evening meetings in Professor Alfred Newton's room in Magdalene. He was a Vice-President of the B.O.U. 1961-64 and Chairman of the Club 1950-1953 and under his kindly, breezy direction, strongly supported by the Hon. Secretary, N. J. P. Wadley, engendered a very friendly atmosphere, with large attendances at the dinners.

MARQUESS HACHISUKA

Marquess Hachisuka, cousin of the Emperor of Japan, came to Europe at the age of 18 under the care of the Japanese Ambassador in Paris, where Jean Delacour first met him in 1921. He studied at Cambridge at Magdelene College and joined the B.O.U. and the B.O.C. in 1923. He made frequent expeditions to various parts of the world including Korea, Manchuria and Indo China with Jean Delacour, to Iceland with Lancelot Turtle, and was with Dr. Hartert on his last trip to North Africa in 1930. He wrote many papers, though to begin with some of them were in somewhat curious English.

He was friendly and gay and drove an enormous touring Bentley, in which he was almost eclipsed, his head barely showing above the driving seat. He regularly attended meetings of the Club and obviously enjoyed his time in England. I remember him saying that the most tragic thing in his life was when his father died and he had to go back to Japan to take his seat in the Upper House of the Diet (House of Lords). He remained a strong anglophil, and the war caused him great distress. He did everything he could to help his friends in Europe and other countries, and remained a member of the Club throughout the war and the years following, and continued to contribute to the *Bulletin* till his sudden death in 1953.

F. C. R. JOURDAIN

The Reverend F. C. R. Jourdain delighted in finding mistakes in other Members' contributions, and his remark "this is not quite correct" was often the opening of an acrimonious discussion. He was an inveterate egg collector and his chief victim was P. F. Bunyard, also an egg collector, who was stone deaf and therefore at a great disadvantage. A heated wrangle between the two was a frequent event.

An unusual incident stands out vividly in my mind. At a meeting of the Club on 8 December 1937, Jourdain spoke on the White Stork, with special reference to recent experiments (in 1936 young birds were introduced and also eggs into Herons' nests in England) which he severely criticised at length. This was followed by a lively discussion in which among others Dr. Bannerman, the Marquess of Tavistock and Dr. Landsborough Thomson took part. I had the temerity to join in, pointing out that those who had achieved successful rearing of the young Storks in Herons' nests in England in 1936 had presumably had the benefit of the experience of German ornithologists. Mr. Jourdain evidently decided I should be put in my place, for at the next meeting, on 28 January 1938 (at which he was Chairman) of all the people who had taken part in the previous discussion he "invited Miss

Barclay-Smith to explain her remarks in the last *Bulletin*". Miss Barclay-Smith accepted the invitation. Mr. Robert Blockey of the Haslemere Educational Museum, with Mr. C. I. Blackbourne, had been responsible for the Stork experiment and I had forwarded him a copy of the *Bulletin* containing Mr. Jourdain's speech, expressing my doubts as to the accuracy of the statements. Thanks to Robert Blockey I therefore dared, with great pleasure, to refute Jourdain's various statements with a heavy artillery of information, much to the satisfaction of other members of the Club, many of whom felt he was taking an unfair advantage by attacking me from the Chair. Jourdain actually looked discomfited and his comeback in an effort to preserve his self esteem was so weak and unconvincing that it was evident *Pastor pugnax* had been completely routed.

C. W. MACKWORTH-PRAED

Cyril Mackworth-Praed was very unassuming and achieved a great deal in a quiet way. Probably his greatest contribution to ornithology was the publication of the African Handbooks of Birds, for which he so successfully employed Captain Claud Grant to act as co-author. He was awarded the Union Medal in 1969, having been the B.O.U.'s Hon. Secretary and Treasurer 1936-44, Treasurer 1951-55 and Vice-President 1949-51. For the Club he was Hon. Secretary and Treasurer 1929-35, Hon. Treasurer 1935-36, Vice-Chairman 1945-46 and Chairman 1956-59, long and creditable service.

He was a keen sportsman and a member of Percy Lowe's Wildfowl Inquiry Committee. With H. A. Gilbert he first started ringing wildfowl, at the decoy at his old home at Orielton in Pembrokeshire and later the Duck Adoption Scheme to raise funds for ringing ducks was his brilliant idea. He was a first class shot and when he led the British Team for the Clay Pigeon Shooting contest during the International Hunting Exhibition in Berlin in 1937, he came back with all the prizes.

Reminiscences of the Club

by David Bannerman

These reminiscences were kindly written during Dr Bannerman's last illness and are published through the kindness of Mrs Bannerman.

To take one's memories back to before the commencement of the First World War, by which time I had occupied the official posts in the B.O.C. of Secretary, Vice-Chairman and Chairman, is asking rather much at my present age of 92, but what I do recollect with much pleasure is the enjoyment I obtained from each appointment (all bar Treasurer, which I avoided).

One of the most valuable functions the dinners performed was the opportunity afforded its members of meeting regularly the leading ornithologists of the day and of listening to the addresses they gave and examining the specimens they exhibited; for those were the days when collecting was at its zenith and at almost every meeting of the Club new species and countless subspecies were brought from Tring by Lord Rothschild or by the officers of the Natural History Museum, especially by W. R. Ogilive-Grant, then Keeper of the National Collections, for the edification of those present. Harry Witherby, usually accompanied by his wife, was another who invariably had something to interest us.

Ladies were as rare as the Dodo in those early days, the only ones eligible having already been elected Hon. Lady Members of the B.O.U., not more than 8 all told if I remember rightly, of which Miss Emma Turner of Broadland, Annie Jackson (later Mrs. Meinertzhagen) and Dorothea Bate of the British Museum I remember most vividly. The two Scottish Hon. Lady Members, Miss Baxter and Miss Rintoul, lived too far away to honour the Club meetings with their presence, but the explorer Maud Haviland, when not on the Yenesei, did at rare intervals attend the dinners. The Duchess of Bedford and Dr. Emilie Snethlage of the Goeldi Museum, Pará, of Brazil, made up this distinguished assembly, making up in quality what it lacked in quantity. I knew them all with the exception of the member from Pará. We could of course invite lady *guests* and very bored some of them must have been after the dinner was over and we settled to more serious things, not to speak of the arguments which arose between prominent members as to how the Cuckoo laid her eggs in a ball-shaped nest with the small entrance hole at the side! 'Pastor pugnax' (the Rev. F. C. R. Jourdain), Percy Bunyard (as deaf as a post, wielding a long-handled hearing aid) and one of the Alexander brothers were always prominent antagonists on such occasions; so heated did these arguments become that on one occasion during my Chairmanship I felt obliged (in case of blood shed) to forbid any mention of the Cuckoo at our next monthly meeting; at which announcement Mr. Bunyard leapt to his feet and said to me "You are the most impartial Chairman" when he meant the very opposite! The laughter this produced did not improve the atmosphere!

The meetings were held in those early days in an Italian restaurant, mainly I guessed because Lord Rothschild was then our Chairman and the Italian owner of the restaurant knew better than we members did what his Lordship liked to eat! On nights when I sat next to him, which as Editor of the *Bulletin* I often did, I noted with amusement and sometimes with envy the dishes surreptitiously placed before him. One of those dishes caused him a restless night and he was then less averse to a move to the much more convenient (for most of us) meeting place, the Rembrandt Hotel, to which Percy Lowe and I had manoeuvred the Club before we too could fall victim to the Italian cooking.

We were still holding our monthly meetings in the Soho area when the thorny question of the ladies becoming eligible for full membership of the B.O.C. on the same terms as men came before the Committee and more than one member of the Club described the suggestion as the beginning of the end. Lord Rothschild himself feared the Club meetings would degenerate into social gatherings of the B.O.U., but being himself a bachelor was able to express his feelings more openly than some of the long-standing members who had wives and daughters.

The Club meetings and the discussions which ensued after the coffee had been cleared were taken very seriously and my previous comments must not give the impression that we were always scrapping with one another. The reverse is very much the case, as perusal of our *Bulletin* will reveal. Those who had brought specimens of birds discussed them with a view to their description being published in the *Bulletin*, which was founded mainly for this function, enabling the describers to gain priority of name for their discoveries. They passed the specimens round the table at which we had dined for close inspection and the same applied to birds' eggs, to which exhibits E. C. Stuart Baker, P. F. Bunyard and our good friend Pastor pugnax himself contributed in full measure. The dispute over the eggs of the Little Ringed Plover *Charadrius dubius* and the Kentish Plover *Charadrius alexandrinus*, which have the habit of sometimes laying eggs indistinguishable from one another in Mallorca, with consequent accusation that the collector had mistaken the parent bird as she left the nest, brought several combatants including Jourdain, Witherby and Captain Philip Munn into the arena and produced a stream of correspondence in the *Ibis*, from which the editor of the *Bulletin* was luckily spared.

Those were the days when the meetings of the Club were well worth attending and now when no bird is allowed to be shot on pain of being shot oneself, and no egg permitted (by law) to be collected, I am not sure whether the members pass their time so fruitfully once the Chairman has announced "Gentlemen you may smoke".

My recollections are mostly of the very happy gatherings and of the distinguished ornithologists from home and abroad who added so greatly to our enjoyment – and knowledge – such as Willie Sclater, the best editor of the *Ibis* we have ever had (son of Dr. Philip Lutley Sclater of lasting fame in the world of science), who was typical of the best our Club could produce. Others included Sir Philip Manson-Bahr and George Carmichael Low, both of the School of Tropical Medicine, as well as Gregory Mathews, author of that vast publication *Birds of Australia*.

When in 1950 I left the Bird Room of the B.M. where I had worked for 40 years, with many trips abroad, we went to live in Scotland and I was forced to break with many scientific societies in London upon whose Councils I had served. I could never attend the B.O.C. meetings again and am consequently unable to compare the days when I attended meetings so regularly with what takes place today. The *Bulletin* still performs its valuable functions and keeps me in touch with the present outlook on ornithology, which has changed out of all recognition.

It was a sad decision to make, though perhaps unavoidable, when the names of members attending each meeting, and of our guests, were no longer printed prominently on the front page of the *Bulletin** and the annual Chairman's address, reviewing the main ornithological events of the year, ceased to be delivered, giving news of all important exploration which had been accomplished, especially the exploits of our own Club members, during the previous year. It was a section of our publication eagerly read and to which we looked forward, keeping us in touch with current events and new discoveries. The cost of printing was no doubt the reason why such news is no longer available in either the *Bulletin*, nor yet in the *Ibis* where so much space is now devoted to material which appears often to be more suited to a book on algebra than a journal of international importance dealing with birds. Our *Bulletin*, under wise editorial management, has continued to perform the function for which it was founded on the same useful lines. Long may it continue to do so.

May I end these recollections of the distant past by wishing the officers and members of the B.O.C. many prosperous years to come and my regrets that I cannot convey my greetings to them all in person.

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*This habit has been now resumed, since its value to historians has been recognised.

Mrs. Jane Bannerman writes:

I remember in the late twenties writing to Harry Witherby and asking if I could take part in the new ringing scheme. "Will you know the difference between a Willow Warbler and a Chiffchaff in the hand?" was the answer. I did not, but having free days at a time when domestic staff was amply available, I started to work on birds. Phil Hollom, then a boy, needed a car for some work on gull roosts, so he drove my car and taught me about birds on the way. Spending long winters in Arizona and California, I used to go bird watching with a retired woman professor. Later I was put up for the B.O.U. and B.O.C. by Harry Witherby and Julian Huxley. That was about 1934 and I remember asking at a dinner who various members were and the reply about D.A.B. was a whispered "That's Bannerman – Africa".

Women had only just been allowed to join the B.O.C. much against some member's wishes, so I listened to the talks and to the speeches and kept quiet. They were all very kind, however, and I gradually made friends with Bernard Tucker, Max Nicholson, F. C. R. Jourdain, Tom Harrison, Willie Sclater, the redoubtable Colonel Meinertzhagen and others. I went on several excursions to France and Switzerland with the Witherbys and was able to repay this kindness by getting the plates of Volume V of the *Handbook* out of Holland on the very last ship before the port was taken by the enemy.

I always enjoyed the monthly dinners – J. P. Chapin brought the first skin of the African peacock to one notable meeting. The London blitz ended the meetings and my too few years as a member ended later when I moved to Scotland.

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Some experiences of the Club

by C. W. Benson

Although I joined the Club more than 40 years ago, I have not attended many meetings, chiefly because I spent nearly all of the period 1932–65 in Africa. Since then I have lived in Cambridge, even so, relatively remote from London. To compensate for this (I hope), I have contributed frequently to the *Bulletin*. More significantly in the present context, I have met many members of the Club, some of them long deceased.

I first attended a meeting in November 1931, as the guest of Miss E. L. Turner (even though, cf. *Bull.* 52: 30, my name is not included!). I had graduated at Cambridge the previous May, and had met her frequently at meetings of the Cambridge Bird Club (she was also instrumental in my visiting Texel Island in September 1930). My chief recollection of that November 1931 meeting was an exhibition of specimens by Lord Rothschild, although I never met him personally, and never otherwise set eyes on him. Apart from Miss Turner, my most important friendship at Cambridge was with David Lack, who came up to Magdalene in 1929, the year after I did. I first met him at the Cambridge sewage farm, famous in those days for itinerant waders. He helped me greatly to cultivate a discerning eye, not only for the commoner British birds but to stand me in good stead when I arrived in Africa.

In July 1932, after appointment as a probationer in the Colonial Service in Nyasaland (now Malawi), I sought the advice of W. L. Sclater. Later, while on leaves of absence, I only met him casually, although he was always kindness and geniality personified. On this first occasion he told me that I would have plenty of opportunities for advancing knowledge, although the day of discovery of new species was over, a qualification that has proved not wholly correct. In the *Bulletin* alone, from the area covered by his *Systema Avium Ethiopicarum,* some 30 new species have been described, of which about two-thirds have stood the test of time. Anyway, as a result of this meeting I arrived in Nyasaland armed only with a copy of the *Systema* and Sir Charles Belcher's *The Birds of Nyasaland.* The latter, although unillustrated except for a map, has brief descriptions giving the salient characters of each species, so clear that I was able to identify the majority without recourse to collecting. Sclater's work was useful as a guide to what species to look for, not included in Belcher's. Partly as a result, in the next 20 years nearly 100 species were added to the Nyasaland list.

I had been in Nyasaland less than a fortnight when I met Jack Vincent for the first time, at Cholo. Recently he reminded me that he had left Cholo Mt. earlier that day (5 September 1932), when he had seen *Apalis chariessa macphersoni*. He may have been the first European to have done so. He was at the time on his important tour of northern Moçambique (*Ibis,* 1933–36). In 1934–35 I sent a number of specimens to the British Museum (Natural History), promptly identified by him. In 1934 too I first met D. W. K. Macpherson. He was responsible for the positive discovery in July 1933 of *A. c. macphersoni*, named after him by Vincent (*Bull.* 54: 177) as a full species, although later shown to be a well marked form of a species at that time only otherwise known from the Tana River, in eastern Kenya. Long afterwards, Macpherson subsidised publication of *The Birds of Malawi*, by my wife and myself (1977), generously stipulating that all proceeds from sales were to be credited to the National Fauna Preservation Society of Malawi. In 1935 I first met J. M. Winterbottom (later Professor, and Director of the Percy FitzPatrick Institute). He was then Provincial Education Officer at Fort Jameson, Northern Rhodesia (now Chipata, Zambia). We have been in frequent contact ever since.

Coming on leave to England in September 1935, I took to the British Museum a further collection of specimens. By that time Vincent had returned to Africa. However, N. B. (later Sir Norman) Kinnear said to me in so many words, "Young man, you would do well to spend some time in the museum, and I will arrange for H. Bench Usher to help you work out your collection. You must write up the results". The same evening he took me as his guest to the meeting of the Club of 9 October (*Bull.* 56: 2). My chief recollection is of a talk by W. L. Sclater on Reg Moreau's recent explorations in northern Tanganyika (now Tanzania), including the discovery of *Anthreptes pallidigaster* (pp. 10–19). Not in the record, the acting Chairman, Hugh Whistler, commented that we could expect "something really good from Mr Moreau", a prediction amply fulfilled. To return to the main point, however, I duly took Kinnear's advice, perhaps a turning point in my ornithological career, and worked for several weeks in the museum, and thereafter, whenever I was on leave, I spent as much time as possible there; indeed, it became almost a mecca for me. This also gave me the opportunity to meet some other members of the Club, including Capt. C. H. B. Grant (I did not meet his collaborator C. W. Mackworth-Praed until 1946), Rear-Admiral H. Lynes and J. D. Macdonald (then recently appointed to the professional staff). Grant (and later Mackworth-Praed) always took a close interest in my activities for the remainder of their lives. So too did Lynes, so far as cisticolas were concerned (by that time he had come to refer to any other birds as "dogs' bodies"). I heard much of that colourful character from Rodney Wood (never a member of the Club, but an all-round field-naturalist, resident in Nyasaland for many years), who accompanied the admiral on one of his last African tours in about 1938. On one occasion, when they were somewhere in southern Kenya, they came to a particularly fragile-looking bridge. So Wood, who was driving their lorry, suggested that the admiral might first cross on foot; to which the retort was, "Not at all, if we are to go down, we'll all do so together". In the event, the bridge stood up to the test. I also heard much of Admiral Lynes from Capt. H. L. Cochrane, R.N. (a member of the Club who lived at Taunton, near my parents). He accompanied the admiral on forays to Sedgemoor in search of Marsh Warblers *Acrocephalus palustris*. He said that he and others had difficulty in equalling Lynes's enthusiasm and energy. Cochrane commented too on the castigations by the Rev. F. C. R. Jourdain at Club meetings of anybody deemed to have deviated from strict accuracy. He felt sorry for such victims.

I returned to Nyasaland in April 1936, having duly completed a paper (in accordance with Kinnear's advice – *Ibis,* 1937: 551–582). I sent a pre-publication copy to Sir Charles Belcher – I daresay he regarded it as much askance as I do to-day. Nevertheless, his rather characteristic comment was, "I am not jealous, only envious of the good times you must have had" – Sir Charles had a great love for Nyasaland, so topographically varied. During the next 30 months, although I had frequent correspondence with Kinnear and Grant, Macpherson and Winterbottom apart, I had no personal contact with any member of the Club. But, returning to England on leave in November 1938, I travelled by the east coast route, enabling me to spend a couple of nights with Reg and Winnie Moreau at Amani. As a result, Reg became my constant mentor (as he was to so many others). He introduced me to the song of the Barred Long-tailed Cuckoo *Cercococcyx montanus*. What was my satisfaction, when almost exactly one year later, I heard the same call at Chinteche, Nyasaland. At that time this genus was only known from the country by a single skin collected in 1901, supposedly of *C. mechowi*. In the British Museum I got to know D. A. Bannerman and G. L. Bates, although for obvious geographic reasons my main contact was with Capt. Grant. However, Bannerman, who had influence in the Colonial Office, and appreciated that I had been working hard, obtained for me an extra two weeks leave! I also remember C. E. Hellmayr, who was helping discriminate type specimens (presumably of American taxa), with a view to their removal to Tring (war was obviously imminent).

Back again in Nyasaland in June 1939, I still managed to find time for some ornithology. In December 1940 I was seconded for military service, and enlisted in the Kenya Regiment at Eldoret. I turned the journey north to good account by making personal contact en route for the first time with Hugh (now Sir Hugh) Elliott in Arusha, Dr V. G. L. van Someren in Nairobi and Sir Charles Belcher on the Kinangop. The last named showed me a sunbird, *Nectarinia mediocris,* with the *caveat* that it and *N. preussi* were "as alike as two peas". Subsequently, in 1941/42, I spent nearly a year in southern Ethiopia, and as related in *Ibis* (1977: 221–222), Dr van Someren helped me greatly. I was released from military service in May 1942 to return to Nyasaland. A year later I spent 2 months leave in South Africa, going first to Pretoria, where I met my wife to be, then Botanist in the Transvaal Museum. Although not a member of the Club, she has assisted me greatly in my work. Of course, I also met Dr Austin Roberts, who again (so far as I know) was never a member of the Club, but was a regular reader of the *Bulletin* (to which the Transvaal Museum would have subscribed). To be sure, his generic splitting had evoked much adverse comment, about which he was perhaps unduly sensitive. At the time he was labouring under great personal strain, since his son had just been killed in Egypt. Nevertheless, on my first evening in Pretoria he entertained me to a lucid and convincing justification for his splitting of the genus *Francolinus.* He was a discerning systematist, drawing my attention to a specimen of *Acrocephalus griseldis* which I had collected in southern Nyasaland, and had dismissed as an *A. a. arundinaceus* or *zarudnyi.* My wife and I remained good friends with Roberts until his untimely death in a car crash in 1948. In 1946 I took pleasure in naming *Prinia robertsi* after him (*Bull.* 66: 52).

In a list of members for 1931/32 I found the name of A. S. Vernay. I believe that he was of English origin, but emigrated to the United States in his youth to make a fortune. He was primarily a sportsman and patron of naturalists, and brought an expedition to Nyasaland in 1946. There was no ornithologist, but two mammalogists – Dr Harold E. Anthony, of the American Museum of Natural History, and G. C. Shortridge, of the Kaffrarian Museum, King William's Town; also a botanist, Dr Leonard J. Brass, of the New York Botanical Garden. On the expedition's arrival in May, my wife and I did what we could to help, but went on leave a few days later. We heard afterwards that Shortridge shot a Black Rhinoceros at Kotakota, without a word to Vernay, who was greatly annoyed, since he would have liked to have bagged it himself. Vernay is known ornithologically for example, by the Vernay-Lang Kalahari Expedition of 1930, of which Austin Roberts was a member (for an account of the birds, see *Ann. Trans. Mus.* 16(1), 1935: 1–185). We spent 6 months in England in 1946, and a similar period in 1949. During these interludes we met Col. R. Meinertzhagen and Capt. C. R. S. Pitman. The latter is especially important to southern African ornithology, since it was his report (1934) which led eventually to the formation of a wildlife conservation department in Northern Rhodesia (Zambia). It included checklists of birds and certain other vertebrates, and the bird list has had 3 successors (*Ibis*, 1976: 427–428).

This is a suitable point in time to terminate this account. Memories of members of the Club in the last 30 years are still relatively green. I have concentrated on those whom I was privileged to meet in the first 15 years of my membership, most of them long deceased. My overwhelming recollection is of their kindness and the trouble to which they went to help me. I cannot conclude without mentioning in this connection certain foreigners, even if they were not all members of the Club (but they certainly read the *Bulletin*): Prof. J. Berlioz, Dr J. P. Chapin (a wonderful correspondent), Dr H. Schouteden, Prof. E. Stresemann (always ready to lend specimens) and Dr A.

Wetmore. Finally, Prof. W. H. Thorpe (fortunately still with us) was responsible for obtaining employment for me at Cambridge on my retirement from Africa in 1965. These last 15 years have in many ways proved the most fruitful that I have enjoyed. I am glad that work in the field (where I spent so much time in Africa) has not been abandoned completely.

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Recollections

by Edith Godman

My earliest recollections are connected with the B.O.U, of playing with my father's beautifully enamelled "Ibis" badge worn at the International Congress in 1905. One of the first memorable ornithological visitors to my home was Canon Tristram, a tall impressive figure in a red tarbush, and unforgettable as he gave us a Squacco Heron's *Ardeola ralloides* egg and two tiny Japanese Fantailed Warblers' *Cisticola juncidis* eggs for our small collection.

My father used to tell us of his early days at Trinity College, Cambridge, whither he went after an amazingly unqualifying scholastic education, having spent 4 years at Eton between the ages of 10 and 14 and leaving after "low fever" under doctor's orders to spend the next 3 years running wild at home, shooting and enjoying sport and an outdoor life – a better preliminary to his natural history career – with only 6 months thereafter at a crammer before going to University. There, friends with similar tastes met in Newton's rooms, meetings in which he and his life-long friend and collaborator Osbert Salvin took part. Sometimes they were uproarious gatherings with even a pillow-fight, in the middle of one of which the coalman called to enquire about a complaint he had received. Emerging ruffled from beneath the pillow, the owner of the room replied to a question "Oh nothing – only it won't burn". The subject of discussion often turned on birds and eventually it was decided in Newton's room to form the B.O.U. where their common interest could be discussed. Later, as they scattered over the world they wrote accounts of their travels and the birds they had seen and from this sprang the *Ibis*. The B.O.C. was started many years later to replace the friendly meetings for which the B.O.U. originated, when the latter had become more scientific and less frequent and social in its function.

The historic event of 1908, the Jubilee year, was the presentation of the founder's gold medal to the 4 original members still surviving, my father, F. D. Godman, and his brother Percy, Mr. P. L. Sclater and Mr. W. H. Hudlestone. That was my only sight of Mr. Hudlestone, but Mr. Sclater was better known to me. Percy Godman, the fourth of seven sons, was one of the keenest about ornithology and travelled with my father in Norway in early days and he passed on to many of his descendants a love and interest in ornithology. Although neither of the 2 brothers was 6ft tall, they complained of the short beds which they found in primitive accommodation in Norway and which made it necessary to put a chair at the foot of the bed on which to put their legs and feet. This, we discovered long afterwards, was due to the fact that many Norwegians slept sitting up. Later when my father visited Sweden, he returned thrilled with the Skansen Museum, the first of its kind where birds could be seen arranged at different levels in their natural habitat, from sea-beach to tree-tops. Birds were my father's absorbing life-long interest and resulted in his producing a book on the Azores, a monograph of the petrels and, for the Biologia Centrali Americana, together he and Mr. Salvin, his devoted friend and collaborator, wrote the volumes on birds and butterflies. His wide interests surprised his more scientific friends who normally only met him in London, especially for example when a party he had invited to visit him at his home in Sussex was met by him at the station driving a four-in-hand. His house contained a library with many bird and flower books as well as a unique collection of bird paintings – most of the original illustrations for John Gould's mammoth "Birds of Europe" and some others. These led on to a rare later assembly of Archibald Thorburn pictures which my sister brought to a climax with the originals of the "Birds of Somaliland", the only book of foreign birds illustrated by Thorburn. My father had the greatest admiration for Joseph Wolf, but conceded that Thorburn outshone him with the life-like portrayal of his birds. Unfortunately Wolf was a procrastinator and he took 20 years to produce a very fine promised picture of an Osprey *Pandion haliaetus* carrying off its fish and never fulfilled his promise to sign all the plates in my father's collection which he had originally painted for Gould.

Henry Elwes, the naturalist and tree-expert was my father's brother-in law and was his companion on several trips abroad, not only in Europe but also to the Himalayas and U.S.A. They had common interests in birds, and butterflies and in plants, of which Elwes collected and introduced over 100 species new to Britain and figured in the *Botanical Magazine*. There was a delightful story of the two driving through the Yosemite Valley on the top of a coach naming every butterfly, bird and plant as they passed. A lady asked the driver the name of something by the roadside, to which he replied "*I* call it a so-and-so but you had better ask those bug-fiends behind what they would call it". Another incident showing Elwes' enthusiasm took place in England when a man had promised to show them a Buzzard's *Buteo buteo* nest and eggs. The man climbed a tree and brought down two splendidly blotched eggs with which Elwes was enchanted, but just as he was pulling out his purse to give the man a fiver, my father called to him to wait and putting the eggs to his nose he detected a smell of paint – they were only hen's eggs disguised! Elwes' enthusiasm turned to fury and seizing the eggs he crushed them in his hand right under the nose of the villain.

I referred above to my sister's book, the *Birds of British Somaliland and the Gulf of Aden* which she and her cousin Sir Geoffrey Archer wrote over the long space of 20 years, owing to the delays of wartime interruptions. This gave my sister the opportunity to devote herself to one of her greatest interests and she often spoke of the help and kindliness given her at the Bird Room in the British Museum (then under Dr. Lowe) by Dr. Bannerman and Mr. Kinnear. Another regular worker was C. H. B. Grant, collaborator with Colonel Mackworth-Praed on their comprehensive *African Handbook of Birds*. During this period my sister was, with these others, a regular attender of the B.O.C. dinners and had the pleasure of attending the International Ornithological Congress at Oxford. King Ferdinand of Bulgaria was on the same excursion to Southwest Wales and he astonished his companions by his intimate knowledge of British butterflies and plants as well as birds by asking if a special moth was found along their route. On being told "yes" he replied that he thought so as he had seen its food-plant from the bus on the drive down.

I had my own introduction to an International Ornithological Congress when I joined my sister at Rouen and the outstanding event was the visit to the Château de Claire where M. Delacour had assembled a remarkable collection of birds and animals. He had an overwhelming knowledge of ducks, as seen in his volumes on the subject, but his original personality stood out in any gathering. Claire, since burnt down, rebuilt and later overrun by the Germans left a vivid picture in those happier days, with his charming mother as chatelaine and his fascinating zoo with the gorgeous red Cock of the Rock, a white Peacock, which obligingly fanned out its lace-like tail in full display, and the brilliant blue and yellow of the macaws flying backwards and forwards in the trees across the wide path over which a herd of kangaroos and Springbok competed in making the longest series of jumps.

On another excursion the episode of the stolen eggs caused great excitement and it was only due to Colonel Bailey's determination that the villain was brought to justice. The party had de-bussed to visit an area of scrub-land where certain rare birds were nesting and after being shown several nests the party was returning to their coaches when there was a hue and cry. Colonel Bailey and a friend had been watching from some distance with their field glasses and had noticed a suspicious figure who had turned back to re-visit a nest. They clearly saw him stoop to pick up something and then open his field-glass case apparently to put it in. On his return to the bus they blocked the culprit's way and demanded to see the contents of his case. On being refused, an altercation ensued and despite protests from the French driver they refused to allow him entrance to the bus until the case was eventually opened and the stolen eggs disgorged, the thief being forced to return them to the nest. The International Congresses gave welcome opportunity for contact among the members of the B.O.U., being joined by many who could not attend the monthly B.O.C. dinners in London. Peter Scott was a conspicuous figure and his wonderful word pictures and first rate lectures stood out against all others. Mr. Eric Hosking's splendid photographs were also appreciated and even more by those who saw the load of photographic material which he carried around in order to achieve such perfect results.

One of the most impressive lectures given at the B.O.C. was by Lord Alanbrook, with a wonderful selection of slides of birds in courtship. He told of his perseverance eventually to achieve pictures of the elusive Flamingoes on almost the last day of a week's photographic visit to the Camargue. The whereabouts of the birds was kept so secret that it was only by overhearing a conversation whilst buying bread at a small shop that he discovered somebody who was able to direct him to the secret place where he was rewarded for his week's patient search.

Both at Congresses and at dinners the towering figure (visibly and metaphorically) of Colonel Meinertzhagen stood out as a great personality, probably one of the greatest ornithologists of his day. Author, artist and observer, he gave character to all he did. His parties were unique – at one in the room at the Natural History Museum which was allotted to him for his work, he provided entertainment for his guests by exhibiting in rows of bottles the contents of the gizzards of the many birds which he had been studying, from the "ostrich sized" lumps to the tiniest grits. On another occasion he had labels for all his guests divided into their categories by distinctive colours, e.g. red for his army friends, green for ornithologists and blue for his relations. Once, after spending some days in Scotland, he was asked what he had been doing in Edinburgh, to which he replied: "I have been observing the Queen". His observations were a remarkable cloak for his secret service work and under the guise of watching the feeding of certain shore birds he was able to make notes on the potential changes or defences of the coast-line.

Colonel and Mrs. Bailey, of "blue poppy" fame, were also active members and again his ornithological interest and his placid, almost sleepy manner disguised acute observation and versatility in secret service work. It was fascinating to hear him tell the story of his escape from detection by German officers by pretending to belong to an Austrian regiment with a different accent and slight discrepancies of uniform. In "Mission to Tashkent" he tells of hairbreadth escapes and that when interrogated about the whereabouts of Colonel Bailey, who was "wanted" as a spy, he provided an albii by telling of his latest news from the most remote spot he could think of.

Colonel and Mrs. Mackworth-Praed were also constant participators in Congresses and dinners of which they were great supporters. Col. Mackworth-Praed's work with Captain Grant on the *African Handbooks* was the first bird book showing distribution by marginal maps, a scheme promptly adopted in other publications. Cyril Praed was a first rate shot with both gun and rifle and was one of the rifle team chosen to shoot for England at Helsinki. His father-in-law, Colonel Stephenson Clarke, used to get him to prune the double top of a conifer by shooting a line of bullets along the offending stem, which eventually broke off. His knowledge of moths and butterflies rivalled his knowledge of birds and flowers and was a great solace to him as his deafness increased. He was never parted from his specimen box, which he always carried in his pocket and with which he was dexterous enough to make successful catches by lifting the lid with one hand almost unnoticed by his prey or onlooker. To the horror of his family he even succeeded in obtaining a specimen of one of the rare species frequenting London during a visit to Buckingham Palace for a garden party. There was a quaint episode at one of the dinners when my sister brought up for identification a nest found in autumn in heather clumps in the garden and asked if anyone could name the bird that built it. It was duly handed round the table, nobody daring to vouchsafe an answer, but suggesting "What does Cyril say?". During the meal a sensation was caused when two fleas hopped out of the nest. My sister was solemnly asked if they might be taken to the Natural History Museum for identification; it subsequently transpired that the nest was made by a bank vole not a bird, and the fleas were of a rare species much appreciated by the Museum.

Many other eminent members frequented the B.O.C. dinners, too many to enumerate them all. Baron de Worms, better known as Mr. de Worms by his acquaintances, but as "the Baron" as he was affectionately called by his friends, was also an expert both on birds and butterflies. It was sad to hear of his recent death. Dr. J. M. Harrison and his son Jeffery, who followed in his footsteps; Phil Hollom who collaborated with Guy Mountfort and Petersen in the production of the invaluable *Field Guide*; Mr Etchecopar, an occasional visitor from France, who spoke English with a perfect accent; Charles Pitman, with a great knowledge of African birds and an expert on its snakes; the Duke of Bedford with his speciality in parrots; and Seth Smith, with his familiarity with the Zoological Gardens and both birds and animals.

One of the most indefatigable travellers, undaunted by increasing years, was Sir Landsborough Thomson, unfailing in attending dinners and partaking in Congresses all over the world and with an encyclopaedic knowledge of birds and animals. Only recently before he died at the age of 86, at a dinner he greeted me with the news that he had just arrived in London after flying over the North Pole that morning!

Of even greater seniority is the astonishingly lively little figure of Captain Collingwood "Cherry" Ingram, now in his 100th year, still active in mind and body, still exhibiting regularly at the Royal Horticultural Society plants of his own collecting or crossing and still working out different theories in ornithology. He was a regular participant in the Congresses and I remember him in Switzerland observing Crested Tits *Parus cristatus* and then later, down on his knees discovering a seedling of a flowering tree which he succeeded in transporting home unobserved. His universal nickname "Cherry" refers to his remarkable collection of Japanese cherries growing in his avenue in Kent and he was one of the few Englishmen who could name them.

Among the more outstanding ladies mention must be made of "Joey" (Georgina) Rhodes, niece of the famous Cecil Rhodes, with a great knowledge of European and African birds and a collector of Ornithological books. She and her sister were much fêted on their tour of S. Africa and Rhodesia at the time of the Centenary Celebrations for their uncle. Miss Acland and Miss Maxse were notable for their excellent bird photography and their enterprise on expeditions in various parts of the world, undeterred by a bad motor accident in S. Africa or by the misfortune of being overtaken by the galloping tide on the Sands of Dee, when they had to spend the day stranded on a small island cut off from their more exposed destination and from the rest of the party further afield.

A lady from U.S.A. also remains in my mind from one of the Congress excursions as she never forgot the ridiculous incident in Lapland when she and I were desperately keen to see the Red-necked Phalarope *Phalaropus lobatus* but were unable to compete with a "long jump" across a wide ditch. However having bidden the party to go on, we removed sufficient clothing to wade across safely and catch up with the party, much to their amusement and their exaggerated accounts of the incident. Incidentally, our next meeting with a Phalarope was on the Caspian Sea and again years later in Iceland. She made a name for herself in America as a writer for bird protection. She turned her small garden into a successful bird sanctuary and also raised considerable funds by the production of an illustrated bird calendar. She was astute in realising the popularity of young animals, so insisted on having young birds on every page.

Our travels always bring us home at last, but we are reminded of being shown as a rarity in a Dutch village the Collared Dove *Streptopelia decaocto* which had recently colonised a village and nested in its apple trees. Now they have invaded England and their rather foolish sounding monotonous cooing can be heard competing with our other turtle doves.

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Notes on the early history of the British Ornithologists' Club

by W. H. Thorpe

I joined the British Ornithologists Union in 1924 and became a member of the B.O.C. in the same year. My first attendance was on March 12th that year. I was proposed for the B.O.U. by a most remarkable figure, Mr. Thomas Parkin of Hastings. As a young man his health had given cause for anxiety so he took a voyage round the world in a sailing ship. During this he became quite an expert on the petrels, which always remained his favourite group. He was present at the first B.O.C. meeting in October, 1892 and used to tell me a good deal about the early days of the B.O.C. In his retirement (if that is the right word) he lived at High Wickham, Hastings, where he had a very large collection of eggs. The great prize of the collection was a Great Auk's egg which he used to handle and show to visitors with a nonchalance and apparent carelessness that took one's breath away. In fact one day, showing this egg to an American friend of mine, Edmund C. Jaeger, he actually dropped it. However the breakage, though serious, was not irreparable, and the egg was, in the end, mended so that it looked, superficially at least, as good as new. Another of Tom Parkin's engaging idiosyncrasies was his habit of keeping his false teeth in a small cardboard box on the mantelpiece, only putting them in when a visitor was announced.

The B.O.C. was in effect founded by R. Bowdler Sharpe, of the British Museum of Natural History to enable members of the B.O.U. to meet more frequently than once a year. The fee was originally 5 shillings *per annum* and 84 joined in the first year. Parkin told me that there was a good deal of snide criticism from some B.O.U. members of this, to them, quite unneccessary foundation, which became popularly known as 'Bowdler's Boozers'.

The outstanding figures of my early days in the club amount to a formidable list. H. F. Witherby was chairman and frequent attenders were Lord Rothschild, Ernst Hartert, the Rev. F. C. R. Jourdain, Col. Meinertzhagen, W. L. Sclater, D. A. Bannerman and E. C. Stuart Baker. A very regular attender was a close friend of mine, who was then 'studying' in Cambridge, the Marquess Masauji Hachisuka — a gay and charming individual with a rather scatter-brained enthusiasm for almost anything which could be brought under the general concept of ornithology. He was always good for a field excursion and was popular among Cambridge undergraduates not merely for his cheerful enthusiasm but also by reason of the fact that he owned a large and rather ramshackle, though quite fast, open Daimler. This was before the days when an ordinary undergraduate could possess a car, so 'Hachi' had no difficulty in filling his vehicle with more than the statutory number of passengers in order to visit the Brecklands, the Norfolk Meres or the Fens. He had a great friend Prince Taka-Tsukasa, who came to the B.O.C. frequently as his guest and who subsequently joined.

Throughout my early days in the club we met at Pagani's Restaurant in Great Portland Street. Scientifically the meetings were often rather dull in that the communications were so specialised and were made primarily to ensure early publication in the Club's *Bulletin* instead of incurring the delay which publication in *Ibis* involved. But socially and as an opportunity to meet and talk with the best ornithologists in the country the gatherings were extremely enjoyable — indeed invaluable. But I should mention one striking exception to the criticism above. I remember B. W. Tucker giving a full-length address to the Club on recent advances in Genetics and its Implications for Ornithology. It was a masterpiece of concise and lucid exposition which was appreciated by all.

Lord Rothschild was a frequent communicator and exhibitor of specimens; but I got the impression of a rather shy man who did not much enjoy talking and usually left detailed discussion to his curator at the Tring Museum, Dr. Hartert.

There were, however, one or two members whose activities generally ensured that meetings were enlivened by the squibs and firecrackers of controversy. The standard topics for argument were usually provided by the oologists, and particularly those who were interested in the breeding habits of the Cuckoo. P. F. Bunyard, a great egg collector, and E. P. Chance, were usually present and one felt rather disappointed if they didn't start to erupt. Once they did so there were plenty of others ready, indeed eager, to join the show. One could be fairly sure that the Rev. F. C. R. Jourdain, a vigorous controversialist, E. C. Stuart Baker and perhaps H. F. Witherby would show a sudden rise in temperature. In 1924 the situation became so explosive that the Committee published the following paragraphs amongst others:—

> The Committee . . . desires to make it clear . . . that . . . their appointment of a Committee to obtain, if possible, direct evidence of the method of deposition of the egg by the Cuckoo must not be taken to imply that they subscribed to Mr. Chance's remarks or that they had any intention of discrediting Mr. Bunyard's account of what he had observed. Their sole desire was to assist in obtaining direct evidence of the method of deposition, by the examination, if possible, of a Cuckoo about to lay.

Even the showing of a film by Mr. Oliver G. Pike depicting a cuckoo actually depositing an egg in a Meadow Pipit's nest by no means stilled the controversy!

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Random recollections of the BOC 1950 - 1960

by N. J. P. Wadley

My introduction to the B.O.C. was due to Colonel Richard Meinertzhagen CBE, DSO — soldier, intelligence officer, ornithologist, author, big game shot, and skilled draughtsman — and a formidable figure withall. It happened like this.

During my time in the desert, my battery was seconded to another regiment whose adjutant was the Hon. Claud Phillimore. We got to know one another well in difficult circumstances and we promised on parting, when my battery was moved, to keep in touch. Subsequently however, after a posting to Turkey, I went to the Staff College at Haifa and there met Claud again. We became great friends and in the course of our wanderings around Palestine found we had a mutual interest in birds.

When I went back to England he said that I must go to see Colonel Meinertzhagen to whom he would give me an introduction, and when unexpectedly I was sent to liase with the War Office in December 1945 I presented my compliments to Colonel Meinertzhagen, who very kindly asked me to lunch with him in one of two enormous houses which he owned in Kensintgon Park Gardens. They were full of skins, photographs, paintings and there was one large dining room with an extensive table, long and narrow. He sat at one end with me on his right, and no other people present. It was the days of rationing and I remember our lunch was kippers and a glass of Guinness. When I told him that I was going back to Turkey for 6 months, he asked whether I collected birds. I said "No".

"Well", he said, "Can you skin them?". I said, "No".

"Ah well", he said, "let's go and have a try".

And thereupon he led me straight to his dissecting room, took some Starlings out of his refrigerator and got down to showing me the elements of skinning a bird. After about 2 hours he decided that I had some aptitude, so he asked me to look out for unusual species when I returned to Turkey — particularly larks of which he had, I believe, recognised and collected something over 50 species and subspecies in Egypt and Arabia. A year later I brought back a collection of 40 skins and Meinertzhagen very kindly looked ove rthem and found they extended the range of 3 species and subspecies.

He subsequently suggested that I should join the BOC and I went to my first meeting in October 1948. There was a formidable array of ornithologists — James Fisher, W. E. Clegg, both the Miss Godmans, J. D. Macdonald, Mackworth-Praed, G. M. Mathews, Commander C. P. Staples, B. W. Tucker and Colonel Wynne, to mention a few.

At the AGM in January 1950 W. E. Clegg, for reasons I think of ill health or overwork, notified the Committee that he could not continue as Honorary Secretary and the appointment of his successor was perforce left vacant. Miss G. M. Rhodes agreed to act temporarily but, somehow, by the end of that year I found myself in the post, my first meeting as Honorary Secretary being in 1950, though I had not been elected at an Annual General Meeting.

I was extremely fortunate in finding as my first Chairman Sir Philip Manson-Bahr, who was not only a large and imposing figure but also radiated a warm kindliness and geniality which made everyone feel immediately at home the moment a meeting started. He was in every way an ideal chairman and he could not have been more kind in guiding my faltering footsteps in the first year or two.

In January 1951, the 500th meeting of the Club was held at the Rembrandt Hotel, Thurloe Place and guests of the Club for the evening were Professor G. R. de Beer and Dr. Julian Huxley. It was at this meeting that Dr. de Beer announced that Col. Meinertzhagen had decided to bequeath his collection of paleolithic birds to the British Museum (Natural History) and the Professor hoped it would be a very long time before this collection came to the Museum!

In March 1951, a joint meeting of the Club with the B.O.U., presided over by Sir Landsborough Thomson, was held at the Fellows Restaurant of the Zoological Society of London in Regents Park, the attendance amounting to 138 members of the Union, members of the Club and guests.

In October of that year the guest of honour was Dr. W. H. Bierman, who gave a most interesting talk and showed some excellent films of birds and whales. Willie Bierman had a wonderful record in the second World War, having been one of the leaders in the underground movement in German-occupied Holland. In the course of conversation with him he told me that they had been able to extract something over £2 million from the German banks by devious methods and it was these funds which kept the underground movement going.

In November 1951 Col. Meinertzhagen took the chair at the meeting as Sir Philip Manson-Bahr was not able to attend. The guest of the Club was Professor Jacques Berlioz and knowing Dick Meinertzhagen's aversion to the French, probably as a result of his experiences in Syria in the First World War, I knew that I would have some difficulty in coping with the evening. I always made a point of putting named place cards on the high table and naturally put Berlioz on Meinertzhagen's right. Had I not done so, I think that Dick would have directed Berlioz to the other end of the table and then seated himself at the top. In the course of dinner I don't think Dick addressed one word to Berlioz, and in fact he spent most of the time with his back turned firmly towards the guest of the evening. However, whoever was on Berlioz's right came to the rescue, speaking perfect French and they got on very well. I was to realise from this incident that I would have rather more of a problem on my hands when Meinertzhagen, who then was Vice-Chairman, was to become Chairman in 2 years time. I was glad that I had been able to have 3 years experience under Manson-Bahr before coping with, as I had expected, a very single minded Chairman.

In May 1952 I received a request from a friend of mine to give any assistance I could to a well known Indian ornithologist, H.H. Prince Dharma Kumarsinhji. The Prince was very anxious to get to know the ranges of European warblers and I was lucky in being able to take him on a good day in May to Oxfordshire and Berkshire woods where we were able to hear and see all the usual English warblers. I had arranged that he should come to a meeting of the Club and on 21 May, with Sir Philip Manson-Bahr in the chair, the Prince was the guest of the Club. He was a delightful man, quite young and with perfect manners and a good range of knowledge of British birds. Later he wrote a book on the birds of Saurashtra, India, and kindly presented me with a signed copy.

In October, the Diamond Jubilee of the Club was celebrated with the usual dinner at the Rembrandt Hotel and the Chairman gave an address describing briefly the history of the Club. At the December 1952 meeting, Col. Meinertzhagen presented to the Club the Godman-Salvin Medal which he had received from the B.O.U., and which he had had cut horizontally into two halves, which were then inlaid on either side of the Club gavel. The latter was a weighty object which never failed to draw members' attention, and which had been presented previously to the Club by Col. Meinertzhagen.

In April 1953 Manson-Bahr handed over the Chairmanship to Meinertzhagen and on retiring he was kind enough to give me a water colour of Mallard and Teal by Archibald Thorburn, which I have treasured with most happy memories of Manson-Bahr's chairmanship. Landsborough Thomson's obituary of Manson-Bahr referred to his "massive frame, the resonant voice, the genial humour, and the warm kindliness"—that is how one remembers him with pleasure at the ornithological meetings. There was another side to him, his sense of showmanship, which encouraged me to branch out into a wider field of speakers and to resort to less formal means of attracting members to the dinners. We were fortunate at that time to be on good terms with the Rembrandt Hotel and when I say that we used to have a 4-course dinner for, I think, about 12*s*. 6*d*., you will appreciate that we were very well treated.

By the time that Dick Meinertzhagen took over the Chairmanship in 1953, I had got to know him well and any apprehension that I might have had in previous years about his being chairman evaporated quickly. We had no more incidents such as Berlioz' visit and I can only say that I could not have had a more encouraging and kindly chairman in the years to follow.

Peter Scott had visited South America in May 1953 to study the South American wildfowl in their natural habitats and in particular to make close acquaintance with the 3 species of duck about which little was known—the Black-headed, the Bronze-winged and the Torrent Duck of Bolivia. In November 1953 he was persuaded to show his film and talk to the club but the evening started disastrously. Peter Scott arrived before I could get there and had already started to set up his projector. Unfortunately the management omitted to inform him that the lighting from one end of the room was from London Electricity Board at 110 volts and at the other from Edminson's Electricity at 240 volts. The restaurant manager had arranged the tables so that there was no indication to Scott at which end to arrange the projector. Unfortunately he took his 110 volt machine to the 240 volt end and blew the lamp. As you can imagine, by the time I arrived 10 minutes later, he had blown his top! However, we managed to get a replacement in time, set up his machine at the proper end, and all was well. Needless to say, the evening was an enormous success because Scott's films of the Torrent Duck were quite fantastic, taken in conditions which must have been totally disagreeable. This was one of those occasions at which we had around 100 members and guests, including guests of the B.O.U., at a meeting.

In April 1956, Col. Meinertzhagen handed over the chairmanship to Mr. C. W. Mackworth-Praed. Dick had been a wonderful Chairman and most kind to me. In spite of his reputation for being a fierce and at times a dangerous man, no one could have been more kind and sympathetic to the problems I had to cope with from time to time. I always think the best story reputedly about Dick was when he was staying at Government House in Salisbury, Rhodesia. In his usual way he went out before breakfast to do some collecting and arriving back for a late breakfast when the household was assembled, he was immediately greeted with a shriek of indignation from an anti-blood sport member of the house party.

"Oh, Colonel Meinertzhagen, I see you have been at it again, shooting those little dickie-birds—Bang, Bang."

"No Madam", replied the Colonel, "Bang".

Mackworth-Praed was again an entirely different type of Chairman, the soul of courtesy, rather reserved and suffering from the disadvantage of being slightly deaf. He was an indefatigable worker and could not have been more helpful in working out the details of meetings, arrangements, seating and every other problem which arose. At his first meeting in April 1956 we were fortunate to have as the guest of the evening Jack Mavrogordato, a very experienced and able falconer apart from being the most engaging and controversial character. His talk was supported that evening by the presence of a trained Saker and a Lanner, both of which he had brought home from the Sudan.

In October of that year, we saw one of the most colourful bird films, by Mrs. Iris Darnton, of the birds of East Africa. Captain Pitman, who knew the country well, described the films as exquisite, while the Chairman closing the meeting admitted being at a loss for words.

In January 1957, Dick Meinertzhagen was awarded the C.B.E. in the New Year's Honours "For services to Ornithology". Meinertzhagen in replying to congratulations said he thought it was the first time that such award had been made to an amateur for his hobby. But those who knew more of his life were well aware that there were other reasons for this high honour.

Early in 1957, we had a further visit from Willie Bierman who had come over specially from Haarlem to address the Club and as usual his charming personality, character and interesting talk entranced the meeting. The subject was a trip to Morocco. At the end of the year an unusual guest was Dr. Senor J. A. Valverde. He spoke on migration through the Occidental Sahara, a subject which appealed to a great number of members and he proferred a completely new interpretation of the movement of birds through this part of the world.

In 1958 there was a considerable amendment to the rules as a result of the weaknesses seen in the Club's finances, and the year also saw the inauguration in December of a new type of meeting at which a controversial discussion was arranged. The subject matter was "Do nesting birds need protection from egg collectors, ringers, photographers and bird watchers? Do the contributions to science justify the disturbances that these enthusiasts cause?". The evening was vastly entertaining thanks to the contribution of Maurie F. M. Meiklejohn, who with a wicked humour and a spirit of sweet unreasonableness, castigated all "who interested themselves in birds, as unmitigated nuisances to the birds themselves" differing in degree only from the tripper in his Ornithological Alphabet "who planted her stern on the nest of a Roseate Tern". It was recorded that the meeting was eventually closed in a spirit of seasonal goodwill.

In April 1959, Mackworth-Praed handed over the chairmanship to Captain C. R. F. Pitman who was again a charming, considerate and a forceful holder of the office. By that time I think that my ideas were beginning to run out and he was always helpful in suggesting new subjects for discussion.

Finally, at the end of a truly vintage ornithological decade, in April 1960 I felt that my 10 years were enough and I asked to be replaced as Honorary Secreatry. I had had a wonderful experience, meeting literally hundreds of the leading ornithologists of this country, Europe, America, Africa, Asia, and Australasia. I had begun to learn a little about ornithology and even more about human nature. It is saddening to remember those in high places who died and have died since and cruel that so much knowledge, experience, character and ability should have come to an end.

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Some reminiscences of the British Ornithologists' Club

by C. G. M. de Worms

Baron de Worms kindly sent these reminiscences shortly before his last illness, and they are published through the kindness of his niece, Mrs. Anne Brown.

It is indeed a privilege to have been invited as one of the "old guard" of the B.O.C. to contribute my reminiscences, since they go back for more than half a century, for this hundredth volume of the *Bulletin*. I have been a fairly regular attendant at the meetings since I was originally elected as far back as 1924, so that I have seen many people and many changes in that long period covering the fortunes of the Club, which we are glad to see is still flourishing today as it was over 50 years ago.

My sponsor at that time was the celebrated animal-lover and benefactor, Alfred Ezra, known the world over as "Chips". His gifts of rare animals and birds to the London Zoo were legion. In those days exhibits after each dinner were very much *de rigueur* and few passed without our hearing the voice of Chips Ezra or those of other eminent ornithologists who used to bring along stuffed examples of some local rarity or new subspecies.

Our venue when I joined the Club was the fashionable restaurant Pagani's in Great Portland Street. It has long since disappeared, but the excellent menu provided used not to cost more than some 5 shillings. Well do I remember the furor among the members when, in the late 1920's, the management wanted to put up the price to 6/6. Those were the days when frequent visitors to these dinners were what might be termed the giants of ornithology. Possibly the most noteworthy among them was Lord (Walter) Rothschild with his somewhat massive frame and deep resounding voice, who died in 1937. He always had something to show from his famous museum at Tring, and was often accompanied by his equally eminent curator of birds, Dr. Ernst Hartert, whose slim figure was indeed in great contrast to that of his employer. He too always had something of special import to say in his guttural accent. He returned to Germany in 1930 at about the time we changed our haven for the dinners to the Rembrandt Hotel in South Kensington. This was to be our venue for the next 40 years, taking us to the end of the 1960's, through the Second World War years, during which the Club continued with lunches at suitable intervals.

It was those first years at the Rembrandt during the 1930's that possibly saw the most colourful period for the Club, but regretably there are now few survivors who attended our meetings during those eventful days. I have already referred to Lord Rothschild and Dr. Hartert, but on occasion we also had the pleasure of the company of an equally celebrated member of the entomological world, with a very good knowledge of birds, who was also at Tring Museum, in the person of Dr. Karl Jordan. He outlived his two colleagues eventually dying in 1959 at the amazing age of 97. His fine features, with a big beard and an appearance of extreme learning, helped to add much dignity to our gatherings in those somewhat far-off days. At that time our secretary was the redoubtable Dr. Carmichael Low with his broad Scottish brogue. He did more than anyone in those days to promote the welfare of the Club and arrange interesting displays and discourses at our dinners, which continued without a break usually on the third Wednesday in each month, except for the period from June to September. A regular attendant at these functions and probably the most controversial figure at that time was the Rev. F. C. R. Jordain, known to most people in the bird world as "Pastor Pugnax", for he could not abide those whose views on certain subjects did not always tally with his own or with some generally accepted precept. He did not mince matters on numerous occasions when at these Club dinners, possibly most notably on those occasions when the nesting habits of the cuckoo and its mode of laying were discussed. A great protagonist on this point, with very fixed views, was Mr. P. F. Bunyard, who did not spare any efforts to publicise and propagate them. His theories were very different from and adverse to those of the Pastor. When it was known that these two members were likely to be facing each other over the dinner table, there was quite a rush to come and hear a "Bunyard-Jourdain scrap', which often ended with the Chairman having to call for the end of the controversy and the many heated words flowing from the reverend gentleman. As Mr. Bunyard was hard of hearing, he used to cup his ears to try and hear the comments on his remarks and would appeal to his neighbour to clarify them. No one ever dared to repeat those that emanated from the Rev. Jourdain, which were usually tart and seldom very complimentary.

In those days at the Rembrandt the attendance was seldom less than 30 members and guests, and usually the dinner was followed by displays of specimens when there was no set lecture. The stuffed birds were handed round and comments asked for after the exhibitor had made his initial remarks. Examples from Tring Museum were always well to the forefront, but many other well-known members used to bring their share, often from Europe and also from the home front. Among leading exhibitors in this field was the tall but somewhat gaunt figure of A. F. Witherby, one of the greatest authorities of his day on British birds. He always attracted special attention with his erudite remarks and comments. Another world-renowned authority whom we used to see quite frequently was E. C. Stuart Baker, who would talk to us on birds of the Far East, mainly from India and beyond. We also occasionally saw W. S. Sclater, yet another famous name in the world of ornithology, who so regretably met an untimely end from one of Hitler's bombings of London. We quite frequently had displays and talks on parrots from the Marquis of Tavistock, who had become Duke of Bedford before he also died tragically during the War. Even as far back as the early 1930's, Cyril Mackworth-Praed was a very active member of the Club, doing so much to further its welfare for the next 40 years, almost up to the time of his death in 1974. It was also at this time that Sir Landsborough Thomson was well in the forefront of those who came to our gatherings, which also saw such well-known figures as Charles Oldham, C. Payne Gallwey and E. G. B. Meade-Waldo, David Seth Smith, Dr. David Bannerman; while from the Zoo we had the eminent pathologist Dr. I. Lucas. An occasional visitor too was Capt. Collingwood Ingram, who joined the Union as far back as 1901 and is still with us, approaching his century. One of the most outstanding and upstanding figures was Col. Dick Meinertzhagen, who was always very outspoken on matters ornithological; but everything he said and did in this field was of great import. Many most distinguished foreign visitors used to honour us, not least M. Charles Delacour of France and New York, whom we still see on occasions.

A most entertaining figure at our meetings was Rear Admiral Lynes, a very jaunty personality, whose favourite subject for a long time was the genus *Cisticola*, which always attracted quite a large audience. Both Max Nicholson and Prof. W. H. Thorpe of Cambridge were already giving us their most interesting talks, still enjoyed by members to the present day.

Ladies too were always then, as now, most welcome at our gatherings though not admitted members until 1922. The most regular frequenters in the 1930's were Miss Cynthia Longfield, whose presence we greatly miss since her retirement to Eire. Miss Clem Acland was another whom we often saw, as also was Miss Phyllis Barclay-Smith, who is still very much with us. Until her recent death, we used to see much of Miss "Jory" Rhodes, niece of the famous statesman. In those days a great annual occasion was the joint dinner of the Club and the Union which took place in early March at the Rembrandt, with usually well over a hundred present and everyone in full evening dress. After a sumptuous meal of six courses, we were entertained with films and slides of the highest quality. I note that after the dinner in 1936 we had no less than seven items on the programme, all by leading experts.

The Club's activities, of course, were very much disrupted in 1939 by the onset of war. Most members became otherwise engaged than on searching for birds; but towards the end of the conflict, lunch-time meetings were arranged, as already mentioned. I shall always remember one of these at the Rembrandt when our speaker was that famous soldier, Field Marshall Lord Alanbrooke, who was able to take time off from his onerous and responsible duties as C.I.G.S. to talk to us on his chief experiences in the study of birds. In after years I used to meet him on the train journey to Waterloo, and once he told me his main enjoyment of the Yalta Conference in 1945 was to see a flock of Red-breasted Geese fly past his hotel window each day.

Our normal dinners were resumed after the war, and in this period the chief landmark was the 500th meeting of the Club which took place on 17 January 1951, at the Rembrandt, with a very big and distinguished attendance. We had as our Chairman the imposing figure of Sir Philip Manson Bahr, of somewhat Churchillian appearance, who gave us a resumé of the history of the Club (*Bull. Brit. Orn. Cl.* 71: 2-5) since its inception in 1892, chiefly at the instance and instigation of Dr. Bowdler Sharpe, one of the great ornithologists of that day. Sir Philip traced the Club's vicissitudes and activities for the subsequent near sixty years. On that memorable occasion too we were addressed by Sir Gavin de Beer, then Director of the Natural History Museum, on his early days in pursuit of studies in ornithology, when he was at Cambridge and in later years. In the following year, after the Sixtieth Annual General Meeting of the Club on 16 April 1952 almost 60 members and guests were regaled to a most fascinating talk and film given by the American authority, Roger Tory Peterson, who we are happy to say is still very active. On that occasion he spoke on the comparison of bird migration in the Americas with that in the British Isles and parts of Europe.

The next most important and equally memorable landmark was when members of the Club participated in the Centenary celebrations of the Union, which were held at Cambridge during the weekend of 20-23 March 1959. I remember we were all housed in sumptuous rooms in the colleges, with myself staying at St. John's. There were receptions and dinners for the large gathering of British and overseas members and distinguished foreign delegates, some of whom delivered most illuminating lectures. This great occasion culminated with a big dinner for most of the participants, held in Fishmongers Hall in the City of London on 23 March. Later that year, on 15 December 1959 a special Club dinner was held at the Rembrandt in connection with bird artists and a special display of pictures was shown, some by Sir Peter Scott, a novel and most entertaining evening. During most of the 1950's the joint Annual Dinner of the Club and the Union, which still continued to be held at the March meeting, took place at the restaurant of the Zoological Society, with the customary showing of ornithological and wildlife films and slides. In 1962, the Annual General Meeting of the Union, together with the Dinner, was removed from London, its first venue being in Edinburgh, and since then this policy has been followed up with an annual conference and dinner, with a preference usually for some University centre, though Wexford in Eire was the venue in 1975. However the dinners of the club continued without a break, still at the Rembrandt until 1969, when for various reasons, not least the increasing expense of these functions, we moved to the Criterion Restaurant in Piccadilly Circus. During the decade of the 1960's we still met on the third Tuesday in each month, except in the summer period, with interesting papers and displays, by leading experts such as Reg Moreau, Capt. C. H. B. Grant and James Fisher, all sad to say no longer with us. In late 1972, when our meetings were bi-monthly, we moved to the Café Royal in Regent Street with very good and spacious accommodation, since the Criterion had closed its doors. However, with even higher rises in costs, in recent years we have met at various venues, of which the Senior Common Room at Imperial College is the most congenial. Here we continue to have our customary illuminating talks, with the Club still very much alive and generally viable.

Let us hope the Club will go forward to celebrate in 1992 the centenary of its foundation in the same healthy state and with equally enthusiastic members that has been its feature up to the present time.

ZOOGEOGRAPHICAL REVIEWS

Co-operative ornithology and conservation in Western Europe

by E. M. Nicholson

It is more than a century since Hungary set up the world's first Scientific Institute for ornithology, and not much less since informal talks in Vienna, led by German agriculturalists and foresters, resulted in the first of the International Ornithological Congresses (I.O.C.), preoccupied with bird protection. Only at the turn of the century, with the 3rd Congress in Paris, did the centre of gravity begin to shift to Western Europe and only during the 1920's did the few earlier pioneering co-operative investigations lead to a start towards permanent organisation. It began in London, but on American initiative, with the establishment in 1922 of the International Committee (now Council) for Bird Preservation, so magnificently served by Phyllis Barclay-Smith from 1924 until her death this New Year. Early ringing schemes and bird observatories such as Heligoland and Rossitten had opened the eyes of gifted young ornithologists such as Landsborough Thomson to the potential of organised ornithology. The idea spread through discussion at meetings, encouragement by such journals as H. F. Witherby's *British Birds*, and field trials.

It seems that a main stimulus to extending co-operative investigations beyond bird-marking was given by the 1908 irruption from Russia across western Europe of Pallas's Sandgrouse *Syrrhaptes paradoxus*, quickly followed by that of the Crossbill *Loxia curvirostra*. These were reported on by von Tschusi in Germany, and in *British Birds*, but the resulting movement was almost nipped in the bud by World War I. It was haltingly resumed in the 1920's with the path-finding Oxford Expeditions to Spitsbergen and the building up by F. C. R. Jourdain and B. W. Tucker of the Oxford Ornithological Society, through which the present writer organised the Oxford Bird Census in 1927 and, with that springboard, the 1928 *British Birds* national census of heronries in 1928.

The success of these ventures in attracting active participants made possible in the 1930's the creation of twin focal points: the Edward Grey Institute, professionally oriented, and the amateur-based British Trust for Ornithology, whose membership was increased and trained to higher standards by a systematic series of national co-operative investigations into the spread of the Great Crested Grebe *Podiceps cristatus*, the status of the Woodcock *Scolopax rusticola*, the habitat of the Lapwing *Vanellus vanellus* and many more. An accompanying offshoot was the British network of bird observatories, experimentally tested by the Oxford Trapping Station from 1927, then taken up by R. M. Lockley at Skokholm, by Scottish ornithologists at the Isle of May and enthusiastically developed elsewhere under the guidance of W. B. Alexander, first Director of the Edward Grey Institute.

In France there was simultaneously established in 1930 a Service Central de Recherches sur la Migration des Oiseaux, but it was concentrated upon providing rings, registering recoveries and initiating sub-stations for bird-marking studies. Its Director, M. A. Chapellier, was however the first to call attention to the growing number of ornithological stations in Europe, of which he counted in *L'Oiseau* examples in 24 countries. He proposed the promotion of closer collaboration between these by means of an international co-ordinating body, which was only to come into being some two decades later in the shape of EURING.

These trains of thought were stimulated by the fortunate coincidence that the 8th I.O.C. was held in 1934 in Oxford, where it enabled a wide range of world ornithologists to see and discuss what was being done and planned there. Among fruitful contributions to this theme was that of Dr. J. Schenk of Hungary, who reminded the Congress that on such matters as migration field ornithologists must first find the facts and then pass them to laboratory ornithologists for evaluation. In Central Europe, as in the United States, the stimulus for organised investigations had come partly from the attempt to discover which birds were beneficial and which harmful to agriculture — a simplist approach which modern ecology has largely outdated.

Bird protection 40-50 years ago was deeply preoccupied with legislation, and to a less extent with educating the young. Resources available were extremely scanty, and a priority claim to them was the employment of watchers at sites where rare birds were especially vulnerable to disturbance or to robbery by egg-collectors, from Shetland to Dungeness and to the Welsh Kite *Milvus milvus* country. Several species, including the Kite and the Great Skua *Stercorarius skua* were probably saved from extinction in Britain by these measures. The menace of oil pollution at sea was also realistically evaluated, but not effectively checked. Although much dedicated and useful work was done, the whole movement was internally split and had little understanding of or contact with any kind of research. The internationally leading figure, Dr. Lönnberg of Sweden, was somewhat preoccupied with the risk that overshooting and other adverse factors would lead to the extinction of certain waterfowl, as had occurred with the Labrador Duck in North America. The bodies convened to examine and deal with that aspect inevitably overlapped and fell foul of wildfowlers who saw things otherwise.

While World War I had slaughtered promising young ornithologists in dozens, and disillusioned or sidetracked others, the different character of World War II had an opposite effect. Many keen bird-watchers found themselves marooned for long periods at remote airfields, ports or radar stations with no alternative leisure pursuit, and willy-nilly turned to more serious field ornithology. Flying officers escorting Atlantic convoys could keep an eye successively on movements of U-Boats and of oceanic birds. Even prisoner-of-war camps became hives of organised intensive study of their bird life, guided by eminent ornithological colleagues who happened at the time to be enemy nationals. How far such experiences were common to other European nationals is not clear; it certainly revolutionised the situation in Britain. Hundreds of young men and a number of young women came out of the Forces after the war keen to pursue this new interest. Most of them had considerable talents and qualifications in some science or profession, or simply in getting things done resourcefully and without fuss. These endowments, however, did not instantly relate to ornithology or conservation, for which they were raw recruits. Some experienced ornithologists viewed with alarm the risks of ornithology being swamped by a tidal wave of ignorant newcomers, and were ready to build stockades against them. Those of us who were then leading the British Trust for Ornithology felt that the difficulties, however formidable, were outweighed by the great potential of this windfall of young but seasoned volunteers. In order to take the strain we rushed through a new decentralised regional structure, took on a full-time secretary whom we were told the Trust could not afford, and set about educating and training the new intake. It worked, aided by such new tools as well-informed radio programmes, largely by James Fisher, explanatory volumes in the New Naturalist volumes, and eventually the pocket field-guides, the first of which by Roger Tory Peterson, Phil Hollom and Guy Mountfort was soon rivalling the Bible in its range of European translations and sales.

However, as we were to find at the first post-war I.O.C. at Upsala in 1950, Britain was not alone in this upsurge. In Sweden itself the Sveriges Ornithogiska Forening, founded only 5 years earlier, had already 1500 members and had built and successfully operated the famous Ottenby station for migration research. France also was fast expanding its ornithological cadre, and had called into play the outstanding ornithological resources of the Camargue in terms both of conservation and research.

About this time also the Netherlands were coming to the peak of an outstanding and many-sided contribution to the advance of ornithology, and among other smaller countries Switzerland also, as was manifest at the Basle I.O.C. in 1954, had made rapid strides. Space permits the mention of only one further country, Spain, which only got going about a decade ago, but bids fair to become one of the leading ornithological nations in Europe before the century ends.

Since World War II the progress of national ornithological growth has enabled and encouraged closer institutional collaboration in such fields as bird-marking, reserve management techniques and lately, perhaps most conspicuously, in the rapid co-ordinated progress made in many countries with national Atlases of Breeding Birds, on the model of that produced by the British Trust for Ornithology in 1976.

As European ornithology has progressed in its internal integration it has become able to take a larger part in the advance of biological studies generally, aided by the matchless quantity of detailed field data which it has been able to accumulate. Indeed that quantity has at times threatened to saturate the absorptive and digestive capacity of the users, and has challenged the capacity even of the numerous and expert Anglo-Dutch team currently working to present it in succinct form in the 7-volume *Birds of the West Palearctic*, or *Birds of Europe, the Middle East and North Africa*, as some prefer to call it. Just as Witherby's great *Handbook*, which it succeeds, was simultaneously matched in Niethammer's *Vogelkunde*, so this new standard work in English is appearing in step with the Glutz *Handbuch der Vogel Mitteleuropas*, providing more extended treatment for a more restricted field. Together, these works should provide European ornithologists with a firm base for renewed critical studies, and should for others give access to the riches of already acquired ornithological knowledge, which might otherwise have remained inaccessible to them.

So much has been done and learned that to attempt to cover it in the space here available seems absurd. Any such account must be superficial, unbalanced, subjective and full of holes. Yet at least it brings together within easy compass some kind of summary of a period of growth, still within living memory, which has undoubtedly revolutionised ornithology. Perhaps most remarkable is the fact that in this period ornithology has successlyfully reaffirmed its role as a science — perhaps the last science — in which amateurs as well as professionals can play a creative part, complementing one another's contributions and together giving it a base of matchless breadth and variety. In no country is this demonstrated more fully and convincingly than in Britain, and in no country either is the conservation of birds conducted on a firmer or more comprehensive scientific basis. Other European countries can also show equal achievements to be proud of in advancing modern European ornithology. Yet perhaps the aspect of which all can least be proud is the continuing inadequacy of efforts to combine the strength and to make good the weakness of the component parts of European ornithology.

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Ornithological advances in Western Europe during the last 50 years

by Einhard Bezzel

The development of ornithology in the last decades could not be better described than by the remark of E. Stresemann in his *Ornithology from Aristotle to the Present:* "... the barriers that protected our special field of knowledge were demolished on all sides. Ornithology has progressed with such breathtaking speed that nothing important can be achieved in it nowadays except by keeping up with the pace, without losing sight of the whole."

The amount of knowledge has increased exceedingly even if we only consider the history in Western Europe. With N. Tinbergen and K. Lorenz, ornithology even played a basic part in the award of a Nobel Prize in 1973. Comparative ethology has been one of the new fields in causal research on birds which has become important beyond the barriers of ornithology.

Ethology as a separate scientific discipline started with studies on the behaviour of corvids, gulls or ducks by N. Tinbergen and K. Lorenz, the latter referring to earlier studies of O. Heinroth in the first decade of this century. Pioneer studies of E. Selous, J. S. Huxley or A. Kortland and some others should be mentioned here as well. Nowadays we find many aspects of bird behaviour studied by the aid of complicated techniques, such as the analysis of the great diversity of behaviour patterns, the description and analysis of bird songs and their function (e.g. E. A. Armstrong, W. H. Thorpe, G. Thielcke), or studying the way in which birds use food resources, construct their nests, act and react against enemies or competitors, etc. The result of such studies provides many new ideas for the understanding of how evolution works or how birds are adapted to their environment.

In many fields of ornithology the pioneer work of single ingenious and enlightened persons has built the basis for modern research methods, which are characterized by the teamwork of scientists and ever increasing help from new techniques in both the laboratory and in the field. Ornithology in different countries and regions has been encouraged and developed, in fact, mainly by a few ornithologists who initiated a rich and thorough research, even in those regions with a poorly developed ornithological tradition.

In 1969 the Sociedad Española de Ornitologia celebrated its 15th anniversary in a special volume of the journal *Ardeola*, honouring in addition its first Secretary General, F. Bernis. Some years later Bernis edited the special volume of *Ardeola* honouring A. Valverde, another great pioneer of ornithology and field zoology in Spain, while many fascinating papers on ecology and distribution of birds are published nowadays by young Spanish ornithologists. In Italy the names of E. Moltoni and A. Toschi must be mentioned in regard to thorough long term systematic and faunistic research, still being continued. Inseparably linked with the development of ornithology are the names of N. Mayaud, H. Heim de Balsac, H. Jouard in France, the Schifferlis (now in the third generation!) in Switzerland, F. Salomonsen in Denmark and in the Arctic, F. Gudmundsson in Iceland, to mention only a few.

From time to time single ornithologists have tried to give a comprehensive synopsis of ornithological knowledge. At the beginning of the period covered here, E. Hartert prepared the ground for a modern view of intraspecific variation by the use of the trinominal system of nomenclature in his "Handbook" (1903–1922). Following in the tradition of Hartert's outstanding systematic work we come to Vaurie's *Birds of the Palearctic Fauna* (2 vols, 1959, 1965) and to the *List of Recent Holarctic Bird Species* by K. H. Voous (*Ibis* 1973, 1977). With his *Atlas of European Birds* (1960) the latter stimulated, beyond just systematic surveys, modern research on the distribution, systematics, evolution and ecology of European birds. Among the most important publications listing the birds of Europe or the Western Palaearctic, the successful modern field guides should not be forgotten starting with the first edition of the classic work of R. T. Peterson, G. Mountfort and P. A. D. Hollom in 1954, now translated into nearly all European languages and issued in many revised editions.

The modern approach of a handbook covering not only systematics, description and distribution but also behaviour, breeding habits, ecology, etc. reached a first culmination in the 1930s when H. F. Witherby and G. Niethammer published their famous works on British and German birds respectively. The use of teamwork they practised has led to the voluminous projects of our days, such as the handbooks of the birds of Middle Europe or of the Western Palaearctic. In giving a comprehensive survey of ornithology as a part of biological sciences, Stresemann's *Aves* (1927–1934) set a standard which has hardly been reached so far. Only once since has a similar attempt at a synopsis of all parts of ornithology in a single volume appeared in Europe – the excellent volume *Oiseaux* in the *Traité de Zoologie* edited by P. P. Grassé (in collaboration with J. Berlioz, N. Mayaud, A. Portmann and others). In a time of "ramification and interconnection" (E. Stresemann) an encyclopaedic summary of ornithology gave rise to the *New Dictionary of Birds* edited by Sir A. Landsborough Thomson in 1964, of which a new edition is now in preparation.

If we look at the most important publications reflecting the work of ornithologists in Western Europe which have produced the biggest impact on ornithological thought we must not forget papers and books on single topics such as life histories of single species. British ornithologists were leading in this field for a long time beginning with D. Lack and his *Life of the Robin* in the early 40's. Meanwhile, similar comprehensive monographs of many species (e.g. White Stork, Swift, Alpine Swift, Blackbird, some waders, colonially breeding seabirds, etc.) have stimulated further experimental work to evaluate the factors which control population size and growth, so that some bird species have become classical examples to demonstrate problems of population ecology, predator-prey-systems, community structure or evolution strategies, etc. both in theory and practice.

Right up to modern times, ringing (banding) has remained a symbol of co-operation between amateurs and professionals; it has always been a fundamental motive power in ornithology, giving most important help in learning about bird migration. Migration of different populations rather than of different species focus the interest today, and a milestone in this field is the atlas of recoveries by G. Zink. The increasing number of ringed birds and recoveries as a result of improved catching techniques and well co-ordinated ringing programmes in many countries has led to international co-ordination in the Euring scheme. In addition, by using radar, bird migration now can be watched very exactly even during night and in bad weather conditions. In 1967 the first book on "Radar Ornithology" was written by E. Eastwood.

Last but not least, modern techniques and a sophisticated statistical approach have penetrated a field of work originated by amateurs: population studies and bird census programmes, the former linked jointly with the names of D. Lack and H. N. Kluijver, with hole nesting song birds as the preferred "subjects". The tits (Paridae) around Oxford, Braunschweig, Steckby, as well as those in Belgium, in the Netherlands or Southwest Germany, to mention only some well known study areas, have provided generations of ornithologists with copious material for detailed studies, which are partially summarised in books by D. Lack, H. Löhrl and C. Perrins.

Many problems are still unsolved. For some time the research in some fields seemed to reach a dead end, until new techniques for experimental work were available. This was the case in the study of bird flight, which now has got new impulses mainly by the work of H. Oehme, W. Nachtigall, G. Rüppell and others. The same holds true with the many attempts to explain the compass orientation of birds and how they navigate. The demonstration of the sun compass by G. Kramer in 1950, the successful work to prove the existence of a magnetic compass used by birds by W. Merkel and especially by W. Wiltschko, or the discovery of the bird's ability to use stars for directional reference at night by F. Sauer, mark some well known steps of progress in this field in which today teams in several countries are working with great effort. Each new result raises new questions and so we are still far away from understanding sufficiently how birds navigate.

The fascinating results of research on circannual and circadian rhythms in birds and on the internal clock which is controlled by external stimuli ("Zeitgeber"), has animated the work on orientation, migration, moulting and breeding cycles as well.

The advances in field studies and bird census programmes have removed nearly all blank spots on distribution maps within Western Europe. Furthermore they have instigated many quantitative studies which enable us to calculate population trends in many species and to point out priorities for conservation management. With the modern atlas work, starting with the gigantic project of the *Atlas of Breeding Birds in Britain and Ireland*, followed by similar publications in France and Denmark and still others in progress in other countries, a new era of our knowledge of bird distribution has begun.

Atlas projects, monitoring and bird census programmes, migration studies, etc. have led to international working groups, committees or similar instruments of cooperation, which, besides the established international societies and councils (such as the ICBP and its many national sections), nowadays play an important role in ornithological research and bird protection as well. May these activities not only advance ornithological research but also improve the chance of survival for birds in Western Europe.

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Some trends in ornithology in East European Countries during the last fifty years

by Z. Bochenski

In the last half-century noticeable progress was made in ornithology in East European countries despite the setback and, in some of them, even complete stoppage of scientific activities brought about by World War II. In addition to the journals *Aquila* (Budapest) and *Berichte des Vereins Schlesischer Ornithologen* (Breslau), which had been started some time before, new periodicals began to appear in the thirties. They are *Moravsky Ornitholog*= *Ceskoslovensky Ornitholog* (published at Prerov from 1934 to 1949), the continuation of which is *Zpráwy MOS*; then *Acta Ornithologica Mus. Zool. Polon.* (Warsaw, since 1934); *Sylvia* (Praha, since 1936); *Beiträge zur Vogelkunde* (Leipzig, since 1949); *Larus* (Zagreb, since 1947); *Der Falke* (Berlin, since 1954); and *Notatki Ornitologiczne* (Warsaw, later Wroclaw, since 1960), not to mention irregularly appearing smaller ephemerals.

Ornithological studies have also been published in other zoological periodicals, of which I shall name only some: *Acta Zoologica Cracoviensia* (Kraków); *Przeglad Zoologiczny* (Wroclaw); *Ekologia Polska* (Warsaw); *Zoologicke Listy* (Brno); *Biologia* (Bratislava); *Biologicke Prace* (Bratislava); *Vertebrata Hungarica* (Budapest); *Zoologische Abhandlungen . . .* (Dresden); *Travaux du Museum d'Hist. Nat. "Gr. Antipa"* (Bucarest); *Comunicari de Zoologie* (Bucarest); *Tibiscus* (Bucarest); and *Bulletin de l'Institut de Zoologie et Musee* (Sophia). Hundreds of papers appearing every year cover all the divisions of ornithology, and their discussion would take far more room than provided for in a short note; therefore I shall confine myself to several chosen divisions with which I am more closely concerned, omitting the remaining ones entirely. I hope that none of the ornithologists working in these last fields will take this amiss.

Faunistic studies which have been carried out in all the countries being discussed, although with fluctuating intensity, in these last decades were undoubtedly influenced by successive editions of the field guide by Peterson, Mountfort & Hollom and that by Makatsch (1969). The first major faunistic monograph that appeared in the German Democratic Republic (GDR) (I omit all the German publications prior to 1945) was that of birds in Saxony by Heyder (1952). A monograph of the birds of Mecklenburg, edited by Klaafs

& Stübs (1977), was issued 25 years later as the first volume of the *Avifauna of the GDR*, which unlike most works of this kind, is divided into volumes on the basis of regional divisions of the country and not on the basis of systematics. Here I must also mention the *Atlas der Verbreitung Palaearktischer Vögel*, which is the result of the collaboration of German and Soviet ornithologists, 7 parts of which have come out so far (1960-1978).

In Poland, after the nineteenth-century work of Taczanowski (1882), the first attempt at a comprehensive avifauna was Sokolowski's (1936) popular-scientific book on the Passeriformes; the outbreak of war however prevented the publication of its second volume. It was only towards the end of the fifties that the whole work, thoroughly revised, appeared (Sokolowski 1958). At nearly the same time a volume on birds was published in a series devoted to the freshwater fauna (Dunajewski 1938). Its author, concerned chiefly in systematics, died in 1944 and Ferens & Wasilewski (1977) prepared the present entirely new edition. Tomialojć's (1972) book is a critical recapitulation of the studies made up to that time and the basis for further studies.

In Czechoslovakia, Ferianc (1964–65) wrote a monograph of the birds of Slovakia, now in its second revised edition (1977–79). A full survey of the birds of Bohemian Silesia was prepared by Hudec, Kondelka & Novotny (1966), while 2 volumes devoted to birds (a third and last is in preparation) edited by Hudec & Cerny 1972 and 1977), have appeared in the series *Fauna CSSR*.

About 20 years ago the birds of Hungary were written up by a team under the direction of Szekassy (1958) as a part of the comprehensive work *Fauna Hungariae*. Somewhat earlier, Lintia (1954, 1955) published the second and third volumes of his work on the birds of Roumania. Unfortunately, the first volume, which was to deal with the Passeriformes, has not come out. In 1978 the first part of a work on birds, edited by Catuneanu (1978), was published as a part of a general survey of the fauna.

The avifauna of the Balkans has not, as yet, received a full monograph. Two books concerning that area were issued in 1950; a rather sketchy work on the birds of Bulgaria by Patev (1950) and a monograph of the birds of Macedonia by Makatsch (1950), covering the southern part of Yugoslavia, Bulgaria and the northeastern part of Greece. Of more importance is the survey of the birds of the Balkan Peninsula by Matvejev (1976), the first volume of which contains data from Bulgaria, Greece, Albania and a large part of Yugoslavia. In addition to the books mentioned above, there are many faunistic papers concerning areas of various size, mostly of interest from the ornithological point of view, as well as contributions and notes.

Knowledge of the changes occurring in the avifauna in the Pleistocene and Holocene during the climatic changes in Europe at that time permits us better to understand the genesis of the present-day fauna. Palaeornithological studies serve this purpose. The best tradition of such studies exists in Hungary, where Lambrecht's (1933) work, in which he summarizes the world achievements in this field, became the starting point of further intensive studies, and particularly in Hungary where Prof. Kretzoi and Prof. Jánossy have published a great many papers containing the results of their investigations of material from Hungary, Roumania, Czechoslovakia, Poland and Austria. Jánossy's (1976, 1977, 1978, 1979) works, in which he deals with the fossil birds of the Carpathian Basin, are unquestionably a synthesis of these studies. In Yugoslavia fossil birds are the subjects of numerous papers by Prof. Malez and his co-workers. One of these, interesting from the zoogeographical point of view, is the work of Malez (1972) on the distribution of the cold-loving animals in the Pleistocene, in which, besides different mammalian species, he discusses also the genus *Lagopus*. In Poland Niezabitkowski's (1932) study of the Ptarmigan *Lagopus mutus* and Willow Grouse *L. lagopus* from Mamutowa Cave appeared nearly fifty years ago, and there has been nothing since till the results of my many years' investigation gathered in a monograph on the birds of the Younger Quaternary in Poland (Bochenski 1974). Since then many new fossil remains have been worked out, including those of birds of the Younger Quaternary from Bacho Kiro Cave in Bulgaria (Bochenski, in press). Some bird remains from the Upper Cretaceous of the Gobi Desert, collected during Polish-Mongolian palaeontological expeditions have been described by Elzanowski (1974, 1977) and others are being prepared. The results of these studies may be of considerable importance to the phylogenetic systematics of birds. Few papers have been published in Roumania, but they contain descriptions of various interesting new forms, as exemplified by Grigorescu & Kessler's (1977) work.

Studies of bird migration and, in that connection, large scale mist-netting of birds, have also contributed to the knowledge of local avifauna. Bird ringing is carried on in all East European countries, and there are several wide scale investigations in progress. The most important one is the so-called "Operation Baltic", initiated in the vicinity of the Ornithological Station, Polish Academy of Sciences, at Górki Wschodnie in Poland in 1960, spreading in the following years to other points along the Baltic coast in Poland, the GDR and the Baltic Republics of the USSR. At these points, active during the spring and autumn migrations, tens of thousands of birds have been caught, ringed, measured and weighed. The work methods have been described in detail by Busse & Kania (1970a) and the observation points listed in annual reports (Busse & Kania 1970b, 1973 and others). The results of these studies have, as yet, been published in some dozens of notes and papers, of which one of the most important is Busse's (1976) on spring migration. Analogous investigations, though on a smaller scale, were carried out in the Karkonosze Mts. 1971–1973 (Dyrcz, in press) and, lately, in Bulgaria, in the valley of the River Struma (Ivanov, pers. comm.).

Studies on spatial orientation of birds were started in Poland in the thirties and after the war continued at the Institute of Psychology and Animal Ethology, Jagiellonian University, under the direction of Prof. R. Wojtusiak. Their results presented in 15 papers, the last of which is still in press. Among other problems, they deal with the influence of terrestrial magnetism on the homing of Swallows *Hirundo rustica* (Wojtusiak, *et al.* 1978).

In monographs of life-histories, without doubt GDR ornithologists have the greatest achievements and their work of this type has appeared, above all, in the series Die Neue Brehm-Bücherei. At first, in the fifties, they were popular and compilatory in style, but more recently both their volume and scientific value has increased. A few of them, taken at random, may be mentioned here by way of example, namely, the studies on larks by Pätzold (1963, 1971), on the Pygmy Owl *Glaucidium passerinum* by Schönn (1978) and on the Saker Falcon *Falco cherrug* by Baumgart (1978). In Hungary

Kapoczy (1979) has monographed the White-winged Black Tern *Chlidonias leucopterus* and the Whiskered Tern *Chlidonias hybrida* and in Poland Mackowicz (1970) the Wood Lark *Lullula arborea*. In Czechoslovakia single species studies are, as a rule, divided among smaller publications, e.g. papers on the Greylag Goose *Anser anser* (Hudec 1971, 1973; Hudec & Formánek 1970; Hudec & Kux 1971, 1972; Kux & Hudec 1970; and others). The life-histories of some ducks, thrushes and other birds have been treated in the same way.

A related group of studies deals with breeding biology, including nest building and a wide range of papers on eggs. The periodical *Beitrage zur Fortpflanzungsbiologie der Vögel*, devoted specially to these problems, was published in Berlin until 1944; unfortunately no similar periodicals appear nowadays, though the number of papers on this subject remains fairly large. Nesting data are often card-indexed, e.g. at the Institute of Vertebrate Zoology, CSASc, at Brno and at the Institute of Systematic and Experimental Zoology, Polish Academy of Sciences, in Cracow. The most important such studies in Poland are those on the nesting of thrushes Turdus (Bocheński 1968) and Corvidae (Kulczycki 1973). In Czechoslovakia more attention has been given to breeding biology than to nest building itself. Havlín's (1971) paper on the reed warblers *Acrocephalus* and Pellantova's (1975) on the Swift *Apus apus* may be mentioned here as examples. In Bulgaria Nankinov is engaged in a study of nesting and Ivanov collects oological material (pers. comm.). In the seventies several larger monographs were published in book form. Makatsch's (1975–77) 2-volume book on the birds of Europe is an outstanding work. In Poland Gotzman & Jablonski (1972) described nests and eggs, and in Czechoslovakia Pikula (1976) worked out methods of nest study.

As I have already mentioned, I neglect many lines of ornithological research out of necessity, of which ecological studies, in respect of quantity, are second only to faunistic ones. However, I should mention J. Pinowski's participation in organising international investigations on granivorous birds and as editor of the *International Studies on Sparrows*, which has been issued in Warsaw since 1967; as well as co-editor of books (Kendeigh & Pinowski 1973; Pinowski & Kendeigh 1977). I have also left out typical systematic, anatomical and physiological works and those pertaining to the psychology of birds, even though in each of these groups we can name many interesting items. The same is true of the achievements in the field of exotic studies, since various ornithologists from the East European countries have worked in all continents.

References:

Baumgart, W. 1978. *Der Sakerfalke*. Die Neue Brehm-Bücherei 514. A. Ziemsen Verlag: Wittenberg Lutherstadt.

Bochenski, Z. 1968. Nesting of the European members of the genus *Turdus* Linnaeus 1758 (Aves). *Acta Zool. Cracov.* 13: 349–440.

— 1974. *The Birds of the Late Quaternary of Poland*. Panstwowe Wydawnictwo Naukowe: Warsawa – Kraków.

— (in press). *Birds. In*: Excavations in the Bacho Kiro Cave (Bulgaria).

Busse, P. 1976. The spring migration of birds at the east part of Polish Baltic coast. Operation Baltic paper No. 27. *Acta Zool. Cracov.* 21: 121–262.

Busse, P. & Kania, W. 1970a. Operation Baltic 1961–1967. Working methods. (Polish with English summ.) *Acta Ornith.* 12: 231–268.

— 1970b. Operation Baltic 1970. Polish section. Reports on the field work. (Polish with English summ.) *Notatki Orn.* 11: 52–57.

— 1973. Operation Baltic 1972. Polish section. Report on the field work. (Polish with English summ.) *Notatki Orn.* 14: 79–86.

Catuneanu, I. (coord.) 1978. *Aves. Fauna Republicii Socialiste Romania.* Vol. XV. Fasc. I. Editura Academiei R.S.R.: Bucuresti.

Dunajewski, A. 1938. *Ptaki (Aves). Fauna Slodkowodna Polski.* Warszawa.

Dyrcz, A. (in press). Autumn migration of birds at Szrenica Pass, Karkonosze Mts.,Poland. (Polish with English summ.) *Acta Zool. Cracov.* 25.

Elzanowski, A. 1974. Preliminary note on the palaeognathous birds from the Upper Cretaceous of Mongolia. *Palaeont. Pol.* 30: 103–109.

— 1977. Skulls of *Gobipteryx* (Aves) from the Upper Cretaceous of Mongolia. *Palaeont. Pol.* 37: 153–165.

Ferens, B. & Wasilewski, J. 1977. *Ptaki (Aves). Fauna Slodkowodna Polski.* 3. Panstwowe Wydawnictwo Naukowe: Warsawa-Poznan.

Ferianc, O. 1964–1965. *Stavovce Slovenska: Vtaky.* I, II Vydav. Slov. Akad. Ved: Bratislava.

— 1977–1979. *Vtáky Slovenska,* 1, 2. (2nd ed.). Veda: Bratislava.

Gotzman, J. & Jablonski, B. 1972. *Gniazda naszych ptaków.* PZWS: Warszawa.

Grigorescu, D. & Kessler, E. 1977. The Middle Sarmatian avian fauna of South Dobrogea. *Rev. Roum. de Géologie Geoph. et Géogr.* 21: 93–108.

Havlin, J. 1971. Nesting biology of the Great Reed Warbler and Reed Warbler on the Namestske rybniky Ponds (Czechoslovakia). *Zool. Listy* 20: 51–68.

Heyder, R. 1952. *Die Vögel des Landes Sachsen.* Akademische Verlagsges.: Leipzig.

Hudec, K. 1971. The breeding environment of the Greylag Goose (*Anser anser*) in Czechoslovakia. *Zool. Listy.* 20: 177–194.

— 1973. Die Nahrung der Graugans, *Anser anser*, in Südmähren. *Zool. Listy.* 22: 41–58.

Hudec, K. & Cerny, W. (ed.). 1972. *Fauna CSSR.* Ptáci 1. Academia: Praha.

— 1977. *Fauna CSRR.* Ptáci 2. Academia: Praha.

Hudec, K. & Formánek, J. 1970. Ringing results of the Greylag Goose (*Anser anser*) in Czechoslovakia. *Zool. Listy.* 19: 145–162.

Hudec, K., Kondelka, D. & Novotny, I. 1966. *Ptactvo Slezska.* Opava.

Hudec, K. & Kux, Z. 1971. The clutch size of the Greylag Goose (*Anser anser*) in Czechoslovakia. *Zool. Listy.* 20: 365–376.

— 1972. Passage migration of the Greylag Goose (*Anser anser*) through Southern Moravia. *Zool. Listy.* 21: 245–261.

Jánossy, D. 1976–79. Plio-Pleistocene bird remains from the Carpathian Basin. I. Galliformes. 1. Tetraonidae. *Aquila.* 82: 13–36. (1977). II. Galliformes. 2. Phasianidae. *Aquila.* 83: 29–42. (1978). III. Strigiformes, Falconiformes, Caprimulgiformes, Apodiformes. *Aquila.* 84: 9–36. (1979). IV. Anseriformes, Gruiformes, Charadriiformes, Passeriformes. *Aquila.* 85: 11–39.

Kapocsy, G. 1979. *Weissbart- und Weissflügelseeschwalbe.* Die Neue Brehm-Bücherei 516. A. Ziemsen Verlag: Wittenberg Lutherstadt.

Kendeigh, S. C. & Pinowski, J. (ed.). 1973. *Productivity, population dynamics and systematics of granivorous birds.* PWN: Warzawa.

Klafs, G. & Stübs, J. (ed.). 1977. *Die Vogelwelt Mecklenburgs.* VEB Gustav Fischer Verlag: Jena.

Kulczycki, A. 1973. Nesting of the members of the Corvidae in Poland. *Acta Zool. Cracov.* 18: 583–666.

Kux, Z. & Hudec, K. 1970. Der Legebeginn bei der Graugans (*Anser anser* L.) in der Tschechoslowakei. *Acta Musei Moraviae.* 55: 233–246.

Lambrecht, K. 1933. *Handbuch der Palaeornithologie.* Gebrüder Borntraeger: Berlin.

Lintia, D. 1954. *Pasarile din R.P.R.* vol. II (Cypseli – Accipiters). 1955. Vol. III (Gressores – Galli). Editura Academiei R.P.R.: Bucuresti.

Mackowicz, R. 1970. Biology of the Woodlark *Lullula arborea* (Linnaeus 1758) (Aves) in the Rzepin Forest (Western Poland). *Acta Zool. Cracov* 15: 61–160.

Makatsch, W. 1950. *Die Vogewelt Macedoniens.* Akademische Verlagsges.: Leipzig.

— 1969. *Wir bestimmen die Vögel Europas.* 2. Aufl. Neumann Verlag: Radebeul.

— 1975–1977. *Die Eier der Vögel Europas.* 1–2. Neumann Verlag: Leipzig-Radebeul.

Malez, M. 1972. Über die Verbreitung Kaltzeitlicher Tiere im jüngeren Pleistozän Südost-Europas. (Croatian with German summ.). Rad 364. Zagreb.

Matvejev, S. D. 1976. *Survey of the Balkan Peninsula Bird Fauna.* (Serbian with English summ.). Beograd.

Niezabitowski, Lubicz E. 1932. *Lagopus lagopus* L. et *Lagopus mutus* Montin, ainsi que la faune qui les accompagne dans le quaternaire de la Pologne. *Rocznik Pol. Tow. Geol.* 8: 179–192.

Patev, P. 1950. *The Brids of Bulgaria* (in Bulgarian). Sofia.

Pätzold, R. 1963. *Die Feldlerche.* Die Neue Brehm-Bücherei 323. 1971. *Heidelerche und Haubenlerche.* Die Neue Brehm-Bücherei 440. A. Ziemsen Verlag: Wittenberg Lutherstadt.
Pellantová, J. 1975. Breeding of the Swift (*Apus apus* Linn.). *Zool. Listy.* 24: 249–262.
Pikula, J. 1976. *Metodika vyzkumu hnizdni bionomie ptactva.* Vlastivedny ustav: Prerov.
Pinowski, J. & Kendeigh, S. C. (ed.). 1977. *Granivorous birds in ecosystems.* Cambridge Univ. Press: Cambridge.
Schönn, S. 1978. *Der Sperlingskauz.* Die Neue Brehm-Bücherei 513. A. Ziemsen Verlag: Wittenberg Lutherstadt.
Sokolowski, J. 1936. *Ptaki ziem polskich.* 1. Poznan.
— 1958. *Ptaki ziem polskich.* 1–2. PWN: Warszawa.
Székessy, V. 1958. *Aves Madarak. Fauna Hungariae* 21–32. Akademiai Kiadó: Budapest.
Taczanowski, W. 1882. *Ptaki krajowe. I–II.* Kraków.
Tomialojc, L. 1972. *The Birds of Poland.* (Polish with English summ.). PWN: Warszawa.
Wojtusiak, R. J., Bochenski, Z., Dylewska, M. & Gieszczykiewicz, J. 1978. Homing experiments on birds. Part XIII. The Influence of Terrestrial Magnetism on Homing Ability in the Swallow, *Hirundo rustica* L. *Folia Biol.* (Kraków). 26: 287–293.

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Some of the results of ornithological investigations in the Soviet Union for the past fifty years

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I am grateful to the British Ornithologists' Club for their kind offer to familiarize British ornithologists with investigations being conducted in the Soviet Union in this field. This is not a simple task since I am to give in a concise form the results of investigations carried out on the vast territory of our country for the period of half a century. Survey of even the most essential ornithological research in this period would inevitably become a bare enumeration of themes and performers. Therefore I shall dwell only on a few aspects, with just a few examples, which I think of most interest.

Russian and Soviet ornithology has an old history. Great and distinctive scientists such as N. A. Severtsov, M. A. Menzbier, P. P. Sushkin and others started that history and much of what follows has been carried out by their pupils and by pupils of their pupils.

Avifaunistics occupies a special place in ornithological investigation, since it is a relevant base for the development of other scientific trends. The degree of faunistic knowledge of any country serves as an index of the general level of development of ornithology there. By the end of the first quarter of the twentieth century, many country regions had been investigated by ornithologists and for some of them faunistic reviews had been published. However, M. A. Menzbier's monograph covered only the European part of the country, while many regions of Siberia, the Far East and Soviet Central Asia were still "blank". A species list for the whole country was still lacking.

For the past 50 years practically the whole of the Soviet territory has been covered by ornithological investigations, with the "blanks" or regions on the periphery drawing most of the attentions of scientists. The appearance of a wide network of ornithological collectives based on institutes of the Academy of Sciences of the USSR and Academies in each Republic and of their regional scientific centres, of Universities and of other higher educational institutions, as well as the creation of State nature reserves, have all played an essential role in the progress of faunistic investigations. Now there are local ornithological bodies throughout almost the whole country, from the Baltic Republics in the west to the Amur Territory in the east, from the Transcaucasian Area and Middle Asia in the south to the Taimir, Yakutia and Wrangel Island in the north. Now as a result, short-term expeditions are gradually replaced by long term local research schemes.

As a consequence of the surveys carried out a great number of papers with avifaunistic content and a number of monographs have been published. Among the latter should be noted substantial reviews on the fauna of birds of the Kazakhstan, Kirgizia, Tajikistan, Pamirs-Alai, Turkmenia, the Altai, Yakutia, the Ussuri Territory, the Kolyma Highlands, the Chukotsk peninsula and Wrangel Island. The European part of the country has attracted much less attention and monographic descriptions of the fauna have been published only for Lithuania, the Moscow Region and Moldavia. Publication for the first time of a complete definitive key to the birds of the whole territory of the USSR by Buturlin and by Dementiev (1935–1941) played an important role in the development of avifaunistics, about which the following figures are of interest. In the first list of birds of the USSR (Dementiev 1941) 672 species were mentioned; in the checklist (Ivanov & Stegmann 1965) 723 species; and in the latest catalogue (Ivanov 1976 and Stepanyan 1975, 1978) 765 and 798 species are included respectively. The difference in totals of species in the latter two lists is due mainly to the fact that Stepanyan considers some subspecies from the list of Ivanov as full species.

Ornithofaunistic investigations have not been limited merely to discovering the species composition in the Soviet Union; it has also tried to determine distribution, general and seasonal, regions of high and low density of species and their relationship with distinct habitats, as well as the historical derivation of regional faunas. Many of such investigations have been published in articles and monographs, and as a result B. K. Stegmann (1938) formulated the principle of ornithogeographical analysis of a territory on the basis of the singling out of types of the fauna. Using this principal he composed a map of the avifaunistic divisions of the extratropical part of Eurasia.

A 6-volume monograph "Birds of the Soviet Union" (1951–1954) prepared under the general editorship of G. P. Dementiev & N. A. Gladkov was an important synthesis of all the accumulated data. Translated into English it is well known to British ornithologists. It should be noted, however, that even while the monograph was in process of preparation, the newest data in taxonomy, distribution and the way of life of birds was accumulating so rapidly that the contents of separate volumes were substantially "obsolete" by the time of their publication. Now, 25 years after its appearance, the monograph does not represent the contemporary level of ornithological knowledge. Therefore, preparations have been started for publication of a new 10-volume monograph, differing from the preceding one not only in completeness of data but also in its lay-out. A great number of experts is involved in this work.

Special note should also be made of the current editions of "Fauna of the USSR" being prepared by the Zoological Institute of the Academy of Sciences of the USSR. Eight volumes devoted to birds have already been published in this series.

The basis for developing the study of functional morphology of birds was created in our country by the works of P. P. Sushkin. His followers, E. V. Kozlova, B. K. Stegmann and especially A. K. Yudin, continued investigations in that direction and they significantly developed the importance of ecology for such research. Work of this sort begins from direct observations in nature, which help establish those peculiarities in the life histories of birds (obtaining food, making of nests, and so on) which require specific attention. In studying morphology questions arise which require additional ecological data, so that significant progress is only possible on the basis of thorough and diversified study of the life history of individual species. Comparatively few such works are being carried out. The book by A. S. Malchevsky "The Breeding Life of Song Birds" (1959) can be considered as one of the most detailed.

In this paper I can only dwell on one prime investigation, namely the book by K. A. Yudin (1965) on phylogenetics and the classification of the Charadriiformes. Yudin attempts to represent their phylogenesis as an adaptive process occurring in relation to natural surroundings. It has been established that the Charadriiformes evolved as the result of leaving forests and of mastering open spaces. This occurred not later than the second half of the Cretaceous and adaptation to new diversified conditions led to differentiation in a previously rather homogeneous forest group in several directions simultaneously. Birds that mastered the banks of wetlands, meadows and swamps formed the initial predecessors of the present-day orders of Gruiformes and Charadriiformes.

Formation of the Charadriiformes themselves was the result of adaptation of an early group to the sea coasts. This favoured development of a propatagial apparatus which allowed flight over extensive areas of water and also the development of large nasal glands of the para- and supra-orbital types. Other anatomical adaptations connected with variations in the manner of feeding and the evolution of apparatus for swimming were also important acquisitions at an early stage. Some were not capable of swallowing large food items, explaining why some of them, such as the Laro-Limicolae, evolved special morphological characters on this account. Formation of the Vanellinae is related to adaptation to live on meadows, of the Tringinae to mastering freshwater basins, of the Scolopacinae and Limosinae to adapting to grass swamps, while the sea coastal habitats brought to life the Calidridinae, many species of the Charadriinae and most of the Haemotopodinae, as well as some others. Inside the Laro-Limicolae group the Glareolidae gradually lost their adaptation to water, whereas for the other species of that group flight and swimming became the leading modes of search for their new prey, fish and water invertebrates, while the ancestors of the Alcidae began to master sea depths and the ancestors of the gulls adapted to life on coastal low-waters.

Such an analytical approach to the formation of contemporary morphological characters in the Charadriiformes attempted to explain the evolution of a large and complex order of birds, to construct its phylogenetic tree, to show relations with neighbouring orders and also to make its classification more precise. Works close to Yudin's were carried out by B. K. Stegmann (1958) for Columbidae and Pteroclidae, by E. V. Kozlova (1955, 1957) for Limicolae and by others. In some of the faunistic investigations (e.g. Kozlova 1975), morphological data have been used to characterise ecological and faunistic groups of species composing the fauna of the territories under study.

The study of bioacoustics has begun to develop only of late. Work is being conducted by a team guided by V. D. Ilyichev. They have proved that the organs of hearing of different species of birds are characterised by simplified structures giving a high functional effect and that adaptations optimising sound perception have especially been singled out. They have also established that the mosaic character of the appearance of ecological correlates occurring independently within various systematic groups is due to parallel development in species with similar ecological needs. V. D. Ilyichev has published "Bioacoustics of Birds" (1972) and "Acoustic Location by Birds" (1975).

Investigations into the behaviour of birds are connected, in the first instance, with works by A. N. Promptov, a gifted naturalist and experimentor. His conception of stereotyped specific behaviour in birds differs substantially from that of K. Lorenz (1935, 1939). Where Lorenz regards the behaviour of birds as innate stereotyped schemes of reaction starting automatically in definite biological situations, then Promptov (1940) considers behaviour as a complex of inherited evolutionally formed reactions connected with anatomic structures and of reactions acquired during the process of individual development. Promptov's (1956) conception regards the complex forms of behaviour of birds, usually referred to categories of "instincts", as biocomplexes which combine congenital and conditional reflexes. The former do not always take the leading role, but they serve as a basis for combining with the latter and so acquire biological adaptive content. Birds do not possess instinctive activities in the sense of a bonded system of innate reactions only.

It has been experimentally shown that the nervous system of birds as it develops possesses most plasticity in the early fledgling stage. This period is of special importance for imitation learning as well as for re-inforcing stable coordinated systems which exert considerable influence upon the consequent life of a species. Specific locomotory coordination which is determined morphologically is not strengthened by imitation. Syringial and some other systems, being younger evolutionally, are more liable and are capable of re-inforcement under the influence of imprint and learning.

An interesting example of imitational re-inforcement of sound communication has been studied by K. A. & E. K. Viks. They found in the forest a male Pied Flycatcher *Ficedula hypoleuca* which imitated the song of the Wood-Warbler *Phylloscopus sibilatrix*, and it proved to be a bird which had been reared experimentally in the nest of *P. sibilatrix*. Experiments have been repeated on a larger scale by tape recording the songs of "fostered" birds, some of them for several years in succession. It has been established that during the second year of independent life only separate strophes characteristic of the foster species remain in their songs, and during the third year the song becomes stereotypical of its own species. Of special interest is the fact that in a few nests of *F. hypoleuca* discovered to have a song uncharacteristic of the species the females have also appeared to have been fostered in the nest of a Wood-Warbler. Another example of the same deep violation of a species' stereotyped behaviour has been noted in the Darwin Nature Reserve during experiments on rearing Sand Martins *Riparia riparia* in the nests of House Martins *Delichon urbica*. During the first days after fledging, the fostered young flew back into the nest more than once and on returning the following spring again tried to occupy the House Martin's nests, but were driven away by the occupants. E .K. Viks (1965) buried in the earth nest boxes containing nests of Pied Flycatchers, leaving open only the entrance hole. In the following year many of the birds reared under such conditions occupied similar nest boxes.

On the other hand, stereotyped nesting behaviour was used by ornithologists at the Darwin Nature Reserve to space out the distribution of many species of nesting birds. Having studied the specific requirements of breeding plots and the conditions needed for nest building, these were artificially created, sometimes within a habitat which was not characteristic of the species. In such a way a breeding colony of Grey Herons *Ardea cinerea* was founded near the laboratory of the Reserve, located about 20 km away from their main colony. Breeding colonies of Common Gulls *Larus canus* and Common Terns *Sterna hirundo* have been established in pre-planned places, and Goldeneyes *Bucephala clangula*, Oystercatchers *Haematopus ostralegus*, Whitethroats *Sylvia communis* and some other species have been caused to breed in unlikely areas. The phenomena of "imprinting" and getting accustomed to a natural situation, characteristic of nestlings, were used for the creation of breeding populations in places new to the species; Greylag Geese *Anser anser* from the Volga delta were moved to the Rybinsk storage lake and Pied Flycatchers from the Moscow Region into the steppe oak groves of the Kursk Region (Isakov 1955, 1956, 1957).

The application of banding and of other methods of marking birds has helped to work out the answers to two basic scientific problems. The first entails the degree of independence and constancy of large geographical populations of birds of various systematic groups. This problem was worked out most fully by T. P. Shevareva (1968, 1970) using as examples of seasonal distribution a number of species of ducks. Definite breeding, migration and wintering areas are typical of populations which do not possess clear cut morphological differences. Overlap with areas of neighbouring populations is only partial. This conception was used as a basis for planning international measures for the protection of migrating birds (Isakov 1967) and also for introducing actual measures to protect individual species, for instance the Snow Goose *Anser caerulescens* nesting on Wrangel Island and wintering in western regions of the USA (Kistchinski, Sladen). The second problem involved investigation of the structure and dynamics of "elementary" (simple) local populations of birds (Isakov 1948, 1949). With some of the behavioural reactions of birds taken into account, experiments were made on the introduction of a number of the species mentioned above.

Long term, highly difficult and labour-consuming investigations by the Latvian ornithologists conducted under the guidance of H. A. Mikhelsons provided an opening for a thorough study of the dynamics of local populations of ducks at the experimental Lake Engures. During more than 15 years they had banded over 1300 brooding females and over 23,000 of their one-day ducklings. For the first time such data provided an objective estimate of the composition and dynamics of local populations of the Shoveler *Anas clypeata* and Tufted Duck *Aythya fuligula* at the experimental lake. On the average long term aspect it seems that in any one year adult female Shovelers formerly banded on the lake comprise 45%, young birds reared on this lake and nesting for the first time 44%, and females never seen before, possibly immigrants, 11%. The corresponding figures for the Tufted Duck were 70%, 21% and 9%. Further, they have found out that in the comparatively stable biological capacity of the lake in question, both the above species of ducks maintain their populations by homeostatic regulation. Increase or decrease in mortality of young ducks depends on the density of a population in a given breeding season and this serves as the main regulating mechanism. This situation is confirmed by a reliable negative correlation between the number of nesting Tufted Duck females on the lake or the number of Shoveler ducklings bred related to the total survival of young ducks at the end of the first calendar year. Together with shooting mortality, mortality of young ducks from other causes is of not insignificant importance. The latter causes increase noticeably during years of increased density. Banding data show that during such years fewer numbers of Tufted Duck reach their winter quarters than during years of average or even below average breeding numbers (Mikhelsons 1975, 1976). These observations are of great importance for resolving conservation problems, for the protection of birds and for regulating shooting.

There are many other aspects of scientific and practical activity related with the study, protection and the use of birds in our country which I am not able to touch on in this paper.

References:

Buturlin, S. A. & Dementiev, G. P. 1934–41. [A full key to the birds of the USSR. Vols. 1–4] Moscow–Leningrad. (Russian)

Dementiev, G. P. & Gladkov, N. A. (Eds.) 1951–54. [Birds of the Soviet Union. Vols. 1–6] Moscow. (Russian)

Isakov, Yu. A. 1948. Elementary populations of birds. Trudy Byuro koltsevaniya ptits. Vol. 7. Moscow. (Russian)

Isakov, Yu. A. 1949. [The problem of elementary populations of birds. Izvestiya Acad. Nauk SSSR, series biol. I] (Russian)

Isakov, Yu. A. 1953. [Greylag Goose introduction to Rybinsk reservoir] Bull. Mosk. Obshchestva ispyt. prirody, otd. biol. Vol. 60, I. (Russian)

Isakov, Yu. A. 1956. [On the possibility of change of certain forms of birds beahviour] Puti i metody ispolizovania ptits v borbe s vrednymi nasekomymi. Moscow. (Russian)

Isakov, Yu. A. 1957. [Theory and practice of the migratory birds introduction] Trudy II Pribalt. ornitolog. konferentsyi. Moscow. (Russian)

Isakov, J. A. 1967. The main geographical populations of waterfowl in the USSR and international measures on their protection and right use. VIIe *Congres des Biologistes du Gibier. Beograd – Ljublana, 1965.*

Ivanov, A. I. 1976. [Catalogue of birds of the USSR] Leningrad. (Russian)

Ivanov, A. I. & Stegmann, B. K. 1964. [A short key to the birds of the USSR.] Moscow. (Russian)

Kozlova, E. V. 1955. [Desert Charadriiformes in Asia and their probable history] Trudy Zoolog. institut Academ. nauk SSSR. Vol. 21. (Russian)

Kozlova, E. V. 1967. [Charadriiformes – Alcidae] Fauna SSSR. Ptitscy, Vol. II, iss. 3.

Kozlova, E. V. 1961. [Charadriiformes – Limicolae] Fauna SSSR. Ptitsy, Vol. I, iss. I, part 2. (Russian)

Kozlova, E. V. 1975. [The birds of zonal steppes and deserts of Central Asia] Trudy Zoolog. institut Acad; nauk SSSR, Vol. 59. (Russian)

Lorenz, K. 1935. Der Kumpan in der Umwelt des Vogels. *J. Orn.* 83, H. 2, 3.

Lorenz, K. 1939. Vergleichende Verhaltensforschung. *Zool. Anzeiger,* suppl. 12.

Malchevskyi, A. S. 1959. [Breeding life of songbirds] Leningrad University. (Russian)

Mihelsons, H. A. 1975. [Results of the study of birds' ecology by banding method (a case study of Ducks)] Materialy II Vsesojuznoi konferentsii po migratsiyam ptits. (Russian)

Mihelsons, H. A. 1976. Self-regulation in breeding populations of ducks. Proc. Int. confer. on the conserv. Wetlands and Waterfowl. Heiligenhafen.

Promptov, A. N. 1940. [Stereotyped behaviour and its formation in wild birds] Doklady Akad. Nauk SSSR, Vol. 27, 2. (Russian)
Promptov, A. N. 1956. [Essays on the problem of biological adaptation of Passerine birds' behaviour] 1956. Moscow–Leningrad. (Russian)
Shevareva, T. P. 1968. [Geographical populations of the Pintail in the USSR] Migratsii zhivotnych, 5. 1968. Leningrad. (Russian)
Shevareva, T. 1970. Geographical distribution of the main dabbling duck populations in the USSR, and directions of their migrations. Proc. Int. Regional Meeting on conserv. of Waterfowl Resources, Leningrad 1968.
Stegmann, B. K. 1938. Gründzuge der ornithogeographischen Gliederung des paläarktischen Gebietes. Fauna SSSR. Ptitsy, Vol. I, iss. 2.
Stegmann, B. K. 1958. [Phylogenetic relationship between the Columbiformes and Pterocleformes and their position in the system of birds] Bullet. Mosk. obsh. ispytat. prirody, otd. biol. Vol. 68, 4. (Russian)
Stepanyan, L. S. 1975–8. [Composition and distribution of the bird fauna in the USSR. Non-Passeriformes 1975; Passeriformes 1978] Moscow. (Russian)
Viks, E. K. 1965. [Successful experiments in directing change in nestling Pied Flycatchers' sterotyped behaviour] Novosti ornitologii, Alma-Ata. (Russian)
Yudin, K. A. 1965. [Phylogeny and classification of Charadriiformes] Fauna SSSR. Ptitsy, Vol. 2, iss. I, part I. (Russian)

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50 Years of Ornithology in North-west Africa 1930-1980

by J. D. R. Vernon

Northwest Africa, consisting basically of the Maghreb countries of Algeria, Morocco and Tunisia, is an important wintering area for many Palaearctic species. Within it's boundaries it includes substantial areas of the Central and Western Sahara, including most of Rio de Oro and Mauritania, which the bulk of West Palaearctic migrants traverse to winter in the tropics.

Before 1930, much of the area was relatively unexplored. Though a good deal was known about the distribution of birds in Tunisia (Whitaker 1905, Bannerman 1927) and to some extent of those in Algeria (Malherbe 1855, Loche 1858, and others), virtually nothing was known of the Western Sahara and little about Morocco except for the coastal Atlantic fringe (Irby 1875, Hartert 1901, 1926, Jourdain 1921, Lynes 1925, Meade-Waldo 1903, 1905), since access inland was difficult, at least by Europeans, until important contributions to the ornithology of the Algerian and Tunisian Sahara were made by Heim de Balsac (1924).

In the 1930's, Heim de Balsac published a series of papers on winter expeditions to southern Algeria and Morocco, including the discovery by Pivain of Dunn's Lark *Eremalauda dunni* in the Western Sahara. Later (1936) he published an important biography on the birds of the Maghreb and the Sahara, establishing for the first time that the Maghreb consisted of a Mediterranean Palaearctic fauna adjacent to a Saharan Ethiopian fauna and defining the ecological factors responsible for restricting the northern boundary of the desert to the 200 mm isohyet. Other important contributions were by Bouet (1938) on the migration routes of White Stork *Ciconia ciconia* in the Maghreb and an expedition to the Hoggar by Meinertzhagen (1934). For Morocco important studies included papers on the birds of Azilal (Lynes 1933), on the High Atlas (Chaworth-Musters 1939) and a paper by Meinertzhagen (1940) on a journey in southwest Morocco and the Middle Atlas describing a number of new races of birds.

In the 1940's, two expeditions by Heim de Balsac (1942, 1948) to study both the fauna and spring migration in southwest Morocco and the Western Sahara, found a less arid zone of desert, a 200 km wide belt of vegetation parallel to the Atlantic coast which produced a unique southern projection of the range of some Palaearctic species including Sardinian Warbler *Sylvia melanocephala* and Magpie *Pica pica*. The expeditions also included exploration of the Jbel Toubkal, High Atlas, and of the Rharb wetlands, where they rediscovered the Crested Coot *Fulica cristata* and African Marsh Owl *Asio helveola*. Some important observations were also made in Algeria and Tunisia by Payn (1948) and in the Western Sahara (Dekeyser & Villiers 1950), adding the Scaly Warbler *Spiloptila clamens* to the Palaearctic list.

In the early 1950's in Tunisia an important discovery was the nesting of the Greater Flamingo *Phoenicopterus ruber* on the Chott el Djerid (Domergue 1950). In 1955, Blanchet's *Liste Oiseaux de Tunisie* was published and supplemented by a brief check list by Gouttenoire (1955). The systematic ringing of migrants at Cap Bon was started by ornithologists of the Societé des Sciences Naturelles de Tunisie (Deleuil 1954). There were important studies by Castan (1955 a, b) on observations and ringing of migrant birds at Gabés in southern Tunisia in the spring.

In Morocco, the first regular reports on birds ringed and recovered were published by the Institute Scientifique Chérifien, Rabat (Panouse & Cortin 1951). Snow (1952) published an important contribution to the study of woodland birds in the northern Maghreb. Bannerman & Priestly (1952), Bannerman & Bannerman (1953) and Bierman (1957, 1959) undertook journeys by car over wide areas of Morocco, forerunners of similar journeys undertaken by many European ornithologists in the 1960's and 1970's. More important was the publication by Valverde (1959) of an ecological study of the Western Sahara (Rio de Oro). Brosset in the 1950's published a series of papers (mainly in *Alauda*) on his observations in northeast Morocco culminating in a special publication (1962) *Ecologie des Oiseaux du Maroc Oriental*. He showed that the desert fauna reached as far north as Berguent some 100km from the Mediterranean coast, confirming de Balsac's observations that the boundary of the desert in the north followed the 200 mm isohyet. For the first time ever, a nest of the Crimson-winged Finch *Rhodopechys sanguinea* was found, in the Middle Atlas by Olier (1959). R. de Naurois (1959) traversed the Western Sahara and reached the Banc d'Arguin, Mauritania, discovering there the first nesting for Africa of the Royal Tern *Sterna maxima*.

The 1960's saw the publication of Heim de Balsac & Mayaud's book *Les Oiseaux de Nord-Ouest Afrique* (1962), closely followed by *Les Oiseaux du Nord de l'Afrique* by Etchécopar & Hüe (1964), later translated into an English version by Hollom (1967). Mention must also be made here of the review by Moreau (1961) on problems of Mediterranean-Sahara migration patterns. K. D. Smith published two important papers (1965, 1968). The first mainly covered winter distribution and autumn migration in Morocco; the second, covering the spring migration, included the results of expeditions to Defilia in southeast Morocco, and to Beni-Abbès in northwest Algeria to study migration across the Sahara, and provided evidence of broad front migration across the whole of Morocco as well as proof of a substantial trans-Saharan passage of some species of terns and waders. Brosset & Olier (1966) found an important colony of Audouin's Gull *Larus audouinii* on the Chafferine Islands and Robin (1966, 1968) discovered the nesting of Greater Flamingo and Slender-billed Gull *Larus genei* at Lac Iriki in southwest Morocco. Important studies were made on Eleonora's Falcon *Falco eleonorae* on Mogador Is. (Vaughan 1961 a, b, Walter 1968) and White-rumped Swift *Apus caffer* was discovered in the High Atlas (Chapman 1969). Also in the 1960's in Tunisia, important contributions were made by Castan (1963), Lombard (1965), Jacoby (1968), Macklin (1969) and Jarry (1969). In Algeria, there were important contributions by Dupuy (1968, 1970) on the Algerian Sahara. Surveys were initiated in the 1960's on the wildfowl status of the Maghreb in winter by Blondel (1963) and Blondel & Blondel (1964), and later all important wetland sites were listed for the 'Project Mar' (Olney 1965). These were followed in the 1970's by a series of regular winter counts of wildfowl on wetlands by the International Wildfowl Research Bureau (IWRB).

The most important event in the 1970's was the discovery in Algeria by Ledant of a new species, the Kabylian Nuthatch *Sitta ledanti* (Burnier 1976, Vielliard 1976, 1978). Burnier (1977, 1979) also contributed some important records for Algeria from little known areas.

There were important expeditions to West Morocco in 1971 and 1972 to study coastal birds and wetlands, especially waders in late summer and autumn (Pienkowski 1972, 1975), followed by a series of publications by Pienkowski and his colleagues, showing the importance of the wetlands for Palaearctic waders on migration in autumn. The 1970's also saw further visits to the Banc d'Arguin with Pététin & Trotignon (1972) making the first census there of wintering waders. Further visits by Gandrille & Trotignon (1973), Duhautois *et al.* (1974), Knight & Dick (1975) and Trotignon (1976) showed how important the Banc d'Arguin was as a breeding area and as a wintering area for Palaearctic waders. Pineau & Giraud-Audine (1974, 1975, 1976) published important contributions to northwest Morocco on breeding, wintering and migration. Hirsch (1976, 1978), on behalf of the World Wildlife Fund (WWF), surveyed colonies of Bald Ibis *Geronticus eremita* in Morocco, and showed there was a marked and continuing decline in breeding numbers since the early 1940's. Other notable records in Morocco were of Fulvous Tree Duck *Dendrocygna bicolor* in 1976 (Heinze 1979, Vielliard 1978a, and others) and of the Cape Shoveler *Anas smithii* (Duff 1979), the second record and first record respectively for the Palaearctic of these Ethiopian species. Heinze's (1979) contribution included the first proof of nesting of the Chanting Goshawk *Melierax metabates* in Morocco. There was also an important contribution on *Passer* in northwest Africa by Summers-Smith & Vernon (1972).

The publication of Heinzel, Fitter & Parslow's (1972) guide on *The Birds of Britain, Europe with North Africa and the Middle East* following Etchécopar & Hüe's earlier book, together with the advent of cheap package tours, was a stimulus to many European ornithologists to visit the Maghreb, especially Tunisia and Morocco, leading to the publication of a *Check List and Field Guide to the Birds of Tunisia* (Thomsen & Jacobsen 1979). A group of ornithologists in Algeria are also collating information on the birds of that country (see Malher 1978) and a B.O.U. check list for Morocco is envisaged in the near future (Vernon *et al.* in prep).

With regard to bird protection in the Maghreb, regulations vary from country to country. The situation in Morocco is discussed by Deetjen (1970) and Mills (1975) and in Tunisia by Kacem (1976), but in practice laws are not always enforced. In Algeria there are proposals to establish a National Park in an important wetland area at El-Kala. Some reserves have been set up in Morocco, including the national parks of Toubkal, High Atlas, and Tazzeka, in the Rif. The World Wildlife Fund is hoping to establish reserves to include the most important colonies of Bald Ibis (Hirsch 1976). In Tunisia, a project to protect 5 wetland areas, some of international importance, has been drawn up in co-operation between the Tunisian authorities and the international conservation bodies (IWRB, IUCN and WWF). The Banc d'Arguin has recently been designated a National Park (Trotignon 1976).

In the future, it is important that a more general awareness of conservation becomes appreciated in Northwest Africa and this can only be achieved through education of both young and old alike. Drainage of wetlands is, as always, a future threat, but of equal importance is the conservation of the indiginous cedar, green oak and cork oak woodland and the areas of endemic Argan woodland in southwest Morocco, still rich in bird species including Chanting Goshawk, Tawny Eagle *Aquila rapax*, Black-winged Kite *Elanus caeruleus*, and Fulvous Babbler *Turdoides fulvus*, though much is being cleared for agriculture. The conservation of the Middle Atlas lakes in Morocco as nesting and wintering areas for wildfowl, including concentrations of Crested Coot, cannot be overestimated. The sub-desert areas around the oases of southern Algeria, Tunisia and along the river valleys of south Morocco, should also be conserved as they are especially rich in desert species and the oases themselves offer important feeding areas for nesting and migrant birds and for some wintering Palaearctic warblers.

To sum up, during the last 50 years our knowledge on the distribution and migration of birds in Northwest Africa has been considerably extended, but much still needs to be done. Most of our knowledge of the Western Sahara is still based on the spring expeditions by Heim de Balsac and Valverde 20-30 years ago and little is known for the autumn and winter periods. Few ornithologists have studied specific areas or species and many areas inland remain relatively unexplored.

In conclusion, this brief review would not have been possible without reference to Heim de Balsac & Mayaud's *Oiseaux de Nord-Ouest Afrique* and to Etchécopar & Hüe's *Birds of North Africa*. Of equal value was Heim de Balsac's paper (1959) 'Ornithologie Francaise en Afrique du Nord' which reviewed the situation in northwest Africa up to 1959. Whilst putting the final touch to this paper (December 1979), it was sad to learn of the death of Heim de Balsac who contributed so much to the ornithology of northwest Africa.

References:

Note. All references before 1962 are excluded but may be found listed in Heim de Balsac & Mayaud (1962).

Blondel, J. Situation de la sauvagine dans le Maghreb. In *Proc. First Eur. Meeting on Wildfowl Conservation*, St. Andrews, 1963.

Blondel, J. & Blondel, C. 1964. Remarques sur l'hivernage des limicoles et autres oiseaux aquatiques au Maroc (Janvier 1964). *Alauda* 32: 250-279.

Brosset, A. 1962. Ecologie des Oiseaux du Maroc Oriental. *Travaux de l'Inst. Sci. Cherifien.* Ser. Zool. No. 22.

Brosset, A. & Olier, A. 1966. Les Iles Chafferines, lieu de reproduction d'une importante colonie de Goélands d'Audouin, *Larus audouini. Alauda* 34: 187-190.

Burnier, E. 1976. Une nouvelle espèce de l'avifauna palaéartique: la Sitelle kabyle. *Sitta ledanti. Nos Ois.* 33: 337-340.

Burnier, E. 1978. Notes sur l'ornithologie Algérienne. *Alauda* 47: 93-102.

Castan, R. 1963. Notes de Tunisie (region de Gabès). *Alauda* 31: 294-303.

Chapman, K. A. 1969. White-rumped Swifts in Morocco. *Brit. Birds* 62: 337-339.

Deetjen, H. 1970. Zur Situation des Vogelschutzes in Marokko. *Internat. Rat. fur Vogelschutz* 10: 65-68.

Dupuy, A. 1968. La migration des Laro-Limicoles au Sahara Algérien. *Alauda* 36: 27-35.

Dupuy, A. 1970. Données sur les migrations transsahariennes du printemps 1966. *Alauda* 38: 278-285.

Duff, A. G. 1979. Souchets du Cap *Anas smithi* au Maroc. *Alauda* 47: 216-217.

Duhautois, L., Charmoy, M.-C. & F., Reyjal, D. & Trotignon, J. 1974. Seconde prospection post-estivale au Banc d'Arguin (Mauritanie). *Alauda* 42: 313-332.

Etchécopar, R. D. & Hüe, F. 1964. *Les Oiseaux du Nord de l'Afrique*. Paris. 19 67. *The Birds of North Africa*. Edinburgh & London.

Gandrille, G. & Trotignon, J. 1973. Prospection post-estivale au Banc d'Arguin (Mauritanie). *Alauda* 41: 129-159.

Heim de Balsac, H. & Mayaud, N. 1962. *Les Oiseaux du Nord-Ouest de l'Afrique*. Paris.

Heim de Balsac, H. 1959. L'ornithologie francaise en Afrique du Nord. *Oiseau* 29: 308-330, 396.

Heinze, J. 1979. Contributo all'Avifauna del Marocco Centrale e Meridionale. *Gli Uccelli D'Italia.* 120-143.

Heinzel, H., Fitter, R., & Parslow, J. 1972. *The Birds of Britain and Europe with North Africa and the Middle East*. London.

Hirsch, U. 1976. Beobachtungen am Waldrapp *Geronticus eremita* in Marokko und Versuch zur Bestimmung der Alterszusammensetzung von Brutkolonien. *Orn. Beob.* 73: 225-235.

Hirsch, U. 1978. Bald Ibis Conservation. *BTO News*, 96: 2.

Jarry, G. 1969. Notes sur les oiseaux nicheurs de Tunisie. *Oiseau* 39: 112-120.

Jacoby, M. 1968. Tunisian Expedition 1968. *Rept. Brathay Exploration Group*, England.

Kacem, S. 1976. In *International Waterfowl Research Bureau Bull.* 41/42: 44-45.

Knight, P. J. & Dick, W. J. A. 1975. Recensement de limicoles au Banc d'Arguin (Mauritanie). *Alauda* 43: 363-385.

Lombard, A. L. 1965. Notes sur les oiseaux de Tunisie. *Alauda* 33: 1-33, 206-235.

Macklin, P. 1969. Tunisia Expedition 1969 (bird notes by K. Rigby). *Brathay Exploration Group*, Field Study report 8.

Malher, F. 1978. Avifaune d'Algérie. *Alauda* 46: 275.

Moreau, R. E. 1961. Problems of Mediterranean-Saharan migration. *Ibis* 103a: 373-427. 580-623.

Mills, S. 1975. Cyclostyled report to Winston Churchill Memorial Trust on visit to Morocco 1975.

Olney, P. (ed.) 1965. Project Mar. List of European and North African wetlands of international importance. *IUCN Pubn.* New Ser. 5.

Pététin, M. & Trotignon, J. 1972. Prospection hivernale au Banc d'Arguin (Mauritanie). *Alauda* 40: 195-213.

Pienkowski, M. W. (ed.) 1972. *University of East Anglia Expedition to Morocco* 1971. Norwich.

Pienkowski, M. W. (ed.) 1975. Studies on coastal birds and wetlands in Morocco 1972. Norwich.

Pineau, J. & Giraud-Audine, M. 1974. Notes sur les migrateurs traversant l'extreme nord-ouest du Maroc. *Alauda* 42: 159-188.

Pineau, J. & Giraud-Audine, M. 1975. Notes complementaires sur les migrations dans l'extreme Nord-Ouest du Maroc. *Alauda* 43: 135-141.

Pineau, J. & Giraud-Audine, M. 1976. Notes sur les oiseaux hivernant dans extreme Nord-Ouest du Maroc et sur leurs mouvements. *Alauda* 44: 47-75.

Pineau, J. & Giraud-Audine, M. 1977. Notes sur les oiseaux nicheurs de l'extreme Nord-Ouest du Maroc: reproduction et mouvements. *Alauda* 45: 75-103.

Robin, P. 1966. Nidifications sur l'Iriki daya temporaire du Sud-marocain, en 1965. *Alauda* 34: 81-101.

Robin, P. 1968. L'avifaune de l'Iriki (sud-Marocain). *Alauda* 36: 237-253.
Smith, K. D. 1965. On the birds of Morocco. *Ibis* 107: 493-526.
Smith, K. D. 1968. Spring migration through southeast Morocco. *Ibis* 110: 452-492.
Summers-Smith, D. & Vernon, J. D. R. 1972. The distribution of *Passer* in northwest Africa. *Ibis* 114: 259-262.
Thomsen, P. & Jacobsen, P. 1979. *The Birds of Tunisia.* An annotated check list and a field guide to bird watching. Copenhagen.
Trotignon, J. 1976. La nidification sur le Banc d'Arguin (Mauritanie) au Printemps 1974. *Alauda* 44: 119-133.
Vielliard, J. 1976. La Sitelle kabyle *Alauda* 44: 351-352.
Vielliard, J. 1978a. Le Dendrocygne fauve *Dendrocygna bicolor* dans le Paléarctique. *Alauda* 46: 178-180.
Vielliard, J. 1978b. Le Djebel Babor et sa Sittelle, *Sitta ledanti* Vielliard 1976. *Alauda* 46: 1-42.
Walter, H. 1968. Zur Abhängigkeit des Eleonorenfalken (*Falco eleonorae*) vom mediterranean Vogelzug. *J. Orn.* 109: 323-365.

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Fifty years of ornithology in West Africa

by Gérard J. Morel

The publication in 1930 of the *Systema Avium Ethiopicarum* by W. L. Sclater marked the end of basic preliminary exploration in Africa. Since then, knowledge has been advanced by various faunistic works, resulting in progress by leaps and bounds.

The *Handbook of the Birds of West Africa* by G. L. Bates (1930) was the first work available to the general public. The same year, D. A. Bannerman started the publication, occupying 21 years, of his 8 volumes of the *Birds of Tropical West Africa*. West African ornithologists thus had the immense privilege of this monumental work at their disposal prior to the appearance in 1953 of the abridged, easily transportable, version in 2 volumes.

In the last 50 years various works of local interest have appeared: *Faune du Centre Africain Français* by R. Malbrant (1936, 1952); *Aves del Sahara Español* by J. A. Valverde (1958); *The Birds of French Cameroon* by A. I. Good (1952–53). Then, of works dealing with the whole of the west: *Oiseaux de l'Afrique Tropicale* by G. Bouet (1955, 1961, not completed); *Les Oiseaux de l'Ouest Africain* by P. L. Dekeyser & J. H. Derivot (1966–68). In 1970 and 1973 C. W. Mackworth-Praed & C. H. B. Grant, with their 2 volumes devoted to West Africa, completed their masterly series the *African Handbook of Birds*, started in 1952 and covering the whole of sub-Saharan Africa. Finally, there appeared in 1977 the *Field Guide to the Birds of West Africa* by W. Serle, G. J. Morel & W. Hartwig. All these works owe their existence in the first place to ornithological explorers who awaited neither the opening of roads nor of railways, even less of air routes or the benefits of modern medicine, to embark on their activities. It is impossible to cite all their names. However, one may mention: G. Bouet (French Congo, Liberia, Cameroun); K. M. Guichard (Mauritania, French Sudan); H. Heim de Balsac (Mauritania); L. Blancou (Central Africa); W. Serle (Sierra Leone, Cameroun, Nigeria); P. L. Dekeyser (Senegal).

In this general account, the Congo merits a special place. It comprises an enormous area, faunistically varied and rich, and has been studied with singular devotion. The number of ornithologists who have worked in this area is impressive. Among them, J. P. Chapin stands out as the last prestigious explorer of our epoch. He collected thousands of skins, described several dozen forms, and produced the 4 volumes *The Birds of the Belgian Congo* (1932–54). It was he who made the sensational discovery of *Afropavo congensis.* H. Schouteden completed this work by organising the exploration of those areas which Chapin could not visit. He published (1948–60) *De Vogels van Belgisch Congo en van Ruanda-Urundi* and (1954–60) *Faune du Congo Belge et du Ruanda-Urundi.* In these days this region is still being actively studied, especially by A. Prigogine.

The Second World War put a curb on research, and then, in the 1960's, most of the colonies gained independence. It was during this time that ornithology passed into the modern era. What are the signs of this?

(a) Pioneering exploration is finished (with great respect, however, to our friend R. de Naurois, student of difficult islands!).

(b) African universities (for example, those of Senegal, Cameroun, Nigeria) include ornithology in their curricula.

(c) Permanent stations, still few in number, have research programmes, welcoming guest workers, and serving as centres for documentation: thus Richard-Toll, in the Sahelian zone, on the River Senegal; Makokou, in equatorial forest in Gabon. In Nigeria, the Ahmadu Bello University is also an active centre.

(d) Two ornithological societies have seen the light of day. In 1964 the Nigerian Ornithologists' Society was born, under the impetus of J. H. Elgood, R. E. Sharland and C. H. Fry. In 1978 it became the West African Ornithological Society, with the bilingual *Malimbus* as its publication medium. Also, in 1974, The Gambia Ornithological Society was founded.

(e) Little by little, in ornithological reviews, biological articles replace accounts of travel and lists of species. To be sure, the realisation of conducting complex studies in West Africa is still limited, above all by an insufficiency of suitable bases and by a shortage of research workers, especially resident ones. Nevertheless, study of the ploceid *Quelea quelea*, on account of its economic importance, has been pressed forward almost to the same extent as that of *Parus major* in Europe; indeed, this granivorous species, subject of several symposia, is of importance in itself, and the resultant knowledge gives cause for reflection.

(f) Finally, West Africa, although sadly behind compared to the rest of the continent, has its ornithological tourists, indiscreet (but not invariably!), and loaded with binoculars and cameras (always!). Pelicans and other spectacular species which until now had only to contend with climatic hazards and predators, must henceforth adapt to this new factor. Can they find the necessary resistance? One must sincerely hope so, for tourism, which it is so easy to deride, plays a big role in the preservation of the rich African fauna. Tourism is one of the surest supports of national parks, themselves a buttress against agricultural development. Senegal (with its ardent director, A. R. Dupuy) and Mauritania have set aside parks devoted especially to birds.

What is one to think of the years ahead? The least one can say is that there remains much to be done. Nevertheless, those who collect lists of species seen can reassure themselves; even in those countries which are "well trodden" it is still possible, in the course of a week, to add half-a-dozen species to the local check list, if indeed such exists, since for the most part such lists have yet to be compiled. Thus in Mauritania ornithologists have so far only traversed the one north-south route!

West Africa, including Zaïre, contains an immense range of habitats, from the desert of the southern edge of the Sahara and the Sahel (wrongly reputed to be ecologically simple) to high forest (rightly reputed as complex), not forgetting montane habitats. The large fluvial river basins of the Senegal and Niger are rich in waterfowl, and present many opportunities for study which should be grasped soon before these areas are upset by reclamation in the name of man's economic needs.

Biological research, even that which is relatively slight, can bring real satisfaction to the investigator, as the following examples of some results or subjects of research make plain:

> Until recently it was believed that the number of Palaearctic species using a western (African) route was less than those using an eastern. In fact, this apparent difference was due to a lack of observers in the west (R. E. Moreau, F. Roux, G. J. Morel).
>
> The fundamental differences of function between the Sahelian savanna and the forest – both in the tropics – have begun to be appreciated. The savanna is characterised by an instability, both seasonal and interannual, resulting in a chaotic situation, and periodic swarming, as in *Quelea* (P. Ward). The forest is more stable, and what is generally accepted as more typically tropical. In savanna, the study of the role of migrants may still produce some surprises, and it may be necessary to revise classical notions of the past in regard to ecological niches and competition. In equatorial forest, in which the study of populations is so difficult, new data are being amassed (A. Brosset and C. Erard in Gabon).

The development of agriculture and the battle against granivorous species constitute a serious menace to the avifauna, especially in the Sahelian region. These dangers, which it does not suffice merely to oppose, since every country has an obligation to improve its quality of life, can be better evaluated and controlled if ornithologists do not shrink from studying species of economic importance.

Acknowledgement: I am grateful to C. W. Benson for the necessary translation into English.

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Ornithological progress in Eastern Africa during the past 50 years

by P. L. Britton

The early ornithology of eastern Africa was well-documented by various authors, in particular Dr. A. Reichenow and Dr. V. G. L. van Someren. This tradition of definitive recording of collected material culminated (for Uganda and Kenya) in the publication (1938) of a prestigious 3 volume work by Sir F. J. Jackson (edited and completed by W. L. Sclater over a period of several years). His extensive bibliography (with notes) included van Someren (1932) and Granvik (1934), but excluded some important later works, notably Friedmann & Loveridge (1937). With few colour illustrations and no distribution maps, Jackson (1938) is far removed from the modern 'bird-book', for which eastern Africa had to wait another 14 years, but this meticulous work enabled the discerning to identify many of the birds of this important region. Bowen (1926, 1931) provided definitive notes on the birds of the Sudan, and a number of papers appeared on the birds of Tanzania (then Tanganyika, Zanzibar and Pemba) during the 1930s, notably those by R. E. Moreau, R. H. W. Pakenham, W. L. Sclater and J. H. Vaughan in *Ibis* (1930-37), and elsewhere by Bangs & Loveridge (1933) and Lynes (1934). The 4 volumes of Archer & Godman (1937-61) cover northern Somalia, while the never completed work of Moltoni & Ruscone (1940-44) deals with the remainder of Somalia.

As residents of Tanzania, R. E. Moreau, R. H. W. Pakenham, N. R. Fuggles-Couchman and Sir H. F. I. Elliott published a number of important papers during the 1940s and 1950s (mainly in *Ibis* and *Proc. Zool. Soc., London*), a tradition which continued until the independence era, including papers by L. A. Haldane and D. K. Thomas in *Tanganyika Notes & Records*. In contrast, the literature from countries to the north is curiously scant for these two decades, though it includes van Someren's 'Days with Birds' (*Fieldiana, Zool.* 38), a number of papers by K. D. Smith on Eritrea (mainly in *Ibis*) and a number of papers by Dr. L. H. Brown (mainly on eagles in *Ibis*). Indeed, Kenya, Uganda and the Sudan have continued to suffer from a dearth of definitive review literature to the present time, while the record for Tanzania and Ethiopia is far from complete.

After 18 years of compilation, and the publication of numerous papers in *Ibis* and the *Bulletin*, Mackworth-Praed & Grant (1952, 1955) provided eastern Africa (including Ethiopia, Somalia and northern Mozambique) with its first comprehensive 'bird-book'. This achievement, together with the appearance of Cave & Macdonald (1955) on the birds of the Sudan, allowed resident and visiting ornithologists to identify the birds of this important region with relative ease for the first time. It is remarkable that these two works and Jackson (1938) remain essential tools for both the museum worker and the field naturalist despite, the availability of field guides (Williams 1963, 1967).

The rich avifauna and diverse biomes of eastern Africa attract numerous visitors, both as expedition members and as amateurs on holiday, yet most of the impetus in the development of ornithology in this region has come from local institutions and residents. In the main, birds have been sadly neglected by research bodies in the region's various National Parks and academic institutions, so that the dominant position enjoyed by the East Africa Natural History Society (EANHS) and the National (formerly Coryndon) Museum in collating ornithological research has never been seriously challenged. The relationship between these two Nairobi-based institutions is essentially informal, each with its own particular interests and emphasis, though they share a library and journal. Perhaps because of this relationship, eastern Africa lacks the conflict between collectors and field naturalists so evident in some parts of the world, and a blend of careful field work and museum study has characterised its ornithology in recent decades, in particular in assessing problems of speciation.

As Curator of Ornithology in Nairobi during the 1950s and early 1960s, and later as a wildlife consultant, J. G. Williams encouraged East African residents to collect specimens of particular interest, as well as instigating and assisting with a number of expeditions to little-worked areas. Williams published a number of short papers, including descriptions of several races, while *Mirafra williamsi* and a number of races were named for him. Unfortunately, his outstanding collection of sunbirds (Nectariniidae) and many other important collections made during this period were not retained in eastern Africa and neither were the 24,000 specimens collected earlier by V. G. L. van Someren, most of which are in the USA (*Ibis* 119: 221). Many of the specimens housed overseas have never been properly documented. There is, however, a fine series of papers on collections made for the Los Angeles County Museum, mainly from the forests of western Uganda (see, in particular, Friedmann 1966), while reports have appeared on a number of collections made for various other museums in the USA (e.g. Ripley & Heinrich 1966, Ripley & Bond 1971). These expedition reports and other papers include descriptions of a number of new races and 2 species (*Otus ireneae*, *Sylvietta philippae*). The extraordinary collection of about 9000 skins from Tanzania amassed by Thorkild Anderson between 1947 and 1967 has not yet been fully documented (Britton 1978b); most are housed in western Europe.

For political and financial reasons the role of the more recent curators in Nairobi (A. D. Forbes-Watson, G. R. Cunningham-van Someren) has been more parochial, consolidating the existing collections and providing assistance to an increasing flow of visitors. It has not been easy for overseas workers to obtain permission to collect in most parts of the region during the 1970s, but it is comparatively easy to do so in the Sudan. The Sudanese civil war hindered ornithological investigations in the 1960s and early 1970s, but significant finds have been made in recent years. M. A. Traylor collected a number of interesting specimens near the border with Zaire, many of them new for the Sudan, while the avifaunal survey of the South Sudan by G. Nikolaus, including the selective collecting of skins for the Bonn and Stuttgart museums in West Germany, has resulted in a number of interesting records. These include remarkable extensions of known range for *Turdus fischeri* and *Clytospiza dybowskii* and a number of specimens requiring description as new races, notably of *Eminia lepida*, *Chlorocichla laetissima* and *Serinus citrinelloides* from the Imatong Mountains. In recent years Dr. J. S. Ash has amassed a great deal of mainly unpublished data from Ethiopia and Somalia, including many hitherto unrecorded species and one new species (Ash 1979). On the whole, however, the avifauna of eastern Africa is now well-known, and unlikely to yield many surprises or much further material requiring description. Thus, emphasis and techniques have changed in recent years, with collecting playing a comparatively unimportant part in most research programmes.

In association with the Laboratory of Ornithology at Cornell University, M. E. W. North pioneered a serious study of bird vocalizations in the 1950s and early 1960s, while an East African ringing scheme had begun as early as 1946. The EANHS ringing scheme started in a small way and did not begin to make a significant impact until the early 1960s. Since taking over as Ringing Organizer in 1966, G. C. Backhurst has greatly improved the scheme, maintaining very high standards. The scheme controls ringing in

East Africa and the South Sudan, concentrating on Palaearctic migrants (for details see Backhurst 1977), though Ethiopian species are ringed in numbers too, notably for census and moult studies (see Zimmerman 1972 and Britton 1978a). The annual ringing of thousands of Palaearctic night migrants at Ngulia Lodge in eastern Kenya (Pearson & Backhurst 1976) is particularly important, accounting for 50% or more of the annual ringing total in recent years. The Nest Record Scheme of the EANHS, operated by Mrs. H. A. Britton since its inception in 1969, collects and collates breeding data from East Africa, including the extensive egg collections of Capt. C. R. S. Pitman, Dr. V. G. L. van Someren and Sir C. F. Belcher, and all published material, as well as current data submitted on printed cards. A separate ringing scheme operates in Ethiopia (see Ash 1978).

With its well-developed infrastructure and abundant opportunity, Kenya is a favourite for post-graduate students and other research workers from overseas. A number of long-term behavioural and ecological projects are currently in progress (detailed in *Scopus* 2(5)). Recent avifaunal surveys have emphasised ecology rather than systematics, notably for Kidepo Valley National Park in northern Uganda (Elliott 1972), Arusha National Park in northeastern Tanzania (Beesley 1972), the East Usambara Mountains in northeastern Tanzania (Stuart & Hutton 1977) and Sokoke Forest in coastal Kenya (Britton & Zimmerman 1979). Three of the above reports appeared as issues of the *Journal of the East Africa Natural History Society and National Museum*. This provides an ideal vehicle for reports of this type, and similar papers on Tsavo East National Park in eastern Kenya and the Dar es Salaam area of coastal Tanzania will appear early in 1980, as will a long paper on the breeding seasons of East African birds. In this same journal, Mann (1976) provided a useful service by collating the most important East African distributional records of recent decades.

Until 1976 the ornithological sub-committee of the EANHS consisted of only 2 members (Ringing Organizer and Nest Record Scheme Organizer). Its expansion to 10-12 members towards the end of 1976, and the launching of a quarterly ornithological journal *Scopus*, is arguably the most important ornithological development of recent decades. In addition to publishing papers on all aspects of ornithology in eastern Africa (including Mozambique, Malawi and Zambia), the sub-committee assesses all bird records from East Africa (Kenya, Tanzania and Uganda), producing an Annual Bird Report as a fifth issue of *Scopus*. This annual review includes a report on the Nest Record Scheme, but reports on the Ringing Scheme continue to appear as issues of the *Journal*.

There are two useful skeleton check-lists of East African birds (Backhurst & Backhurst 1970, Forbes-Watson 1971) and a more detailed work for Ethiopia (Urban & Brown 1971), but the region still has no definitive work comparable with those available for Zambia, Malawi and elsewhere (excepting the islands of Zanzibar and Pemba, admirably documented by Pakenham 1979). Early in 1977 the ornithological sub-committee began work on an approximately 400-page work on the status, habitat and distribution of East African birds, to appear early in 1980, edited by P. L. Britton. Dealing with such a rich yet poorly documented avifauna has proved immensely difficult, and its near completion after only 3 years represents a remarkable achievement for the sub-committee and its chairman Dr. D. J. Pearson. It is hoped that this long-overdue definitive work will act as a catalyst so that the ornithology of this important region will flourish still more in the decades ahead.

References:

Archer, G. & Godman, E. M. 1937-61. *The Birds of British Somaliland and the Gulf of Aden.* Vols. 1-2. Gurney & Jackson: London; Vols. 3-4. Oliver & Boyd: Edinburgh.

Ash, J. S. 1978: *Bird-ringing in Ethiopia*, Report No. 7, 1969-77. Washington. Cyclostyled. 1979. A new species of serin from Ethiopia. *Ibis* 121: 1-7.

Backhurst, G. C. 1977. East African bird ringing report 1974-77. *Jl.E. Africa Nat. Hist. Soc. Natn. Mus.* 146: 1-9.

Backhurst, G. C. & Backhurst, D. E. G. 1970. *A Preliminary Check List of East African Birds.* Nairobi, cyclostyled.

Bangs, O. & Loveridge, A. 1933. Reports on the scientific results of an expedition to the south-western highlands of Tanganyika Territory. Part 3, Birds. *Bull. Mus. Comp. Zool.* 75(3): 143-221.

Beesley, J. S. 1972. Birds of the Arusha National Park, Tanzania. *Jl. E. Africa Nat. Hist. Soc. Natn. Mus.* 132: 1-30.

Bowen, W. W. 1926, 1931. Catalogue of Sudan birds based on the collection in the Sudan Government Museum (Natural History). *Sudan Govt. Mus. (Nat. Hist.) Publication* 1: 1-120, *Publication* 2: 1-163.

Britton, P. L. 1978a. Seasonality, density and diversity of birds of a papyrus swamp in western Kenya. *Ibis* 120: 450-466.

Britton, P. L. 1978b. The Andersen collection from Tanzania. *Scopus* 2(4): 77-85.

Britton, P. L. & Zimmerman, D. A. 1979. The avifauna of Sokoke Forest, Kenya. *Jl. E. Africa Nat. Hist. Soc. Natn. Mus.* 169: 1-16.

Cave, F. O. & Macdonald, J. D. 1955. *Birds of the Sudan.* Edinburgh & London: Oliver & Boyd.

Elliott, C. C. H. 1972. An ornithological survey of the Kidepo National Park, northern Uganda. *Jl. E. Africa Nat. Hist. Soc. Natn. Mus.* 129: 1-31.

Forbes-Watson, A. D. 1971. *Skeleton Checklist of East African Birds.* Nairobi, cyclostyled.

Friedmann, H. 1966. A contribution to the ornithology of Uganda. *Bull. Los Angeles County Mus. Nat. Sci.* 3: 1-55.

Friedmann, H. & Loveridge, A. 1937. Notes on the ornithology of tropical East Africa. *Bull. Mus. Comp. Zool.* 81(1): 1-413.

Granvik, H. 1934. The ornithology of north-western Kenya Colony with special regard to the Suk and Turkana Districts. *Revue. Zool. Bot. Afr.* 25: 1-190.

Jackson, F. J. 1938. *The Birds of Kenya Colony and the Uganda Protectorate.* London: Gurney & Jackson.

Lynes, H. 1934. Contribution to the ornithology of southern Tanganyika Territory. *J. Orn. Lpz.* 82: 1-147.

Mackworth-Praed, C. W. & Grant, C. H. B. 1952, 1955. *African Handbook of Birds.* Series 1, 2 volumes. *Birds of Eastern and North Eastern Africa.* London: Longmans, Green & Co.

Mann, C. F. 1976. Some recent changes in our knowledge of bird distribution in East Africa. *Jl. E. Africa Nat. Hist. Soc. Natn. Mus.* 157: 1-24.

Moltoni, E. & Ruscone, G. G. 1940-44. *Gli uccelli dell' Africa Orientale Italiana.* Milano: Museo Civico di Storia Naturale.

Pakenham, R. H. W. 1979. *The Birds of Zanzibar and Pemba.* London: B.O.U. Check-list No. 2.

Pearson, D. J. & Backhurst, G. C. 1976. The southward migration of Palaearctic birds over Ngulia, Kenya. *Ibis* 118: 78-105.

Ripley, S. D. & Bond, G. M. 1971. Systematic notes on a collection of birds from Kenya. *Smith. Contrib.* 111: 1-21.

Ripley, S. D. & Heinrich, G. H. 1966. Comments on the avifauna of Tanzania, 1. *Postilla* 96: 1-45.

Someren, V. G. L. van 1932. Birds of Kenya and Uganda, being addenda and corrigenda to my previous paper in *Novitates Zoologicae. Novit. Zool.* 37: 252-380.

Stuart, S. N. & Hutton, J. M. (eds.) 1977. *The Avifauna of the East Usambara Mountains, Tanzania.* Cambridge, cyclostyled.

Urban, E. K. & Brown, L. H. 1971. *A Checklist of the Birds of Ethiopia.* Addis Ababa: Haile Selassie I University Press.

Williams, J. G. 1963. *A Field Guide to the Birds of East and Centra Africa*. London: Collins.
Williams, J. G. 1967. *A Field Guide to the National Parks of East Africa*. London: Collins.
Zimmerman, D. A. 1972. The avifauna of the Kakamega Forest, western Kenya, including a bird population study. *Bull. Am. Mus. Nat. Hist.* 149: 255-340.

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Ornithology in southern Africa, 1930 — 1980

by R. K. Brooke

1930 saw the publication of Part II (the passerine section) of W. L. Sclater's *Systema Avium Aethiopicarum*. This marked the close of the period of basic faunal exploration and also provided a modern classification and nomenclature within which the birds of south and east Africa could be studied and discussed. Prior to 1930 nearly all publications on Afrotropical ornithology dealt with faunal exploration, descriptions of new taxa and correct placing of taxa in the natural system. Such work is not yet completed but it is now a relatively minor constituent of studies on our birds.

1930 saw the start of the *Ostrich*, not the area's first indigenous ornithological journal but the first to survive till the present. After the war it was joined by the *Bokmakierie* and later the *Honeyguide*. In addition, much on ornithology was published in museum serials both in Africa and overseas and in wider natural history serials. The period has seen a spate of books on the faunas of different sections of the area. The first decade saw the appearance of Chapin's *Birds of the Belgian Congo* followed by Priest's *Birds of Southern Rhodesia*, Gill's *First Guide to South African Birds*, Winterbottom's *Revised Check List of the Birds of Northern Rhodesia*, Hoesch's & Niethammer's *Vogelwelt Deutsch-Suedwest-afrikas* and Roberts's *Birds of South Africa*. After the war many more books were published until one could say that most major areas were covered more or less satisfactorily by an annotated checklist or a handbook, the exceptions being northern Mozambique and Tanzania. Most of these books are mentioned again later, but three post war publications of wider scope must be mentioned here: White's *Revised Checklists of African Birds*; Mackworth-Praed & Grant's *Handbooks of African Birds*; Moreau & Hall's and Snow's *Atlas(es) of African Birds*. These three complexes of works have put the documentation of Afrotropical ornithology far ahead of the ornithology of the Neotropical and Oriental regions, the other predominantly tropical regions of the world.

1930 saw the first full year of the Southern African Ornithological Society's life, again not the first indigenous bird society but the first to survive till the present.

Southern African ornithology has been dominated by residents, often immigrants who made their homes there, compared with east Africa, which has depended on expatriates. Partly as a result of this and partly because of southern Africa's somewhat less complex variety of habitats and faunas there has been far more work on local lists and on faunal analysis in southern Africa than in east Africa, exemplified by the 90 issues of the *South African Avifauna Series* edited by Winterbottom. One disadvantage of the differences between developments in southern and eastern ornithology is that English names for birds have developed different traditions. The more prominent South African birds have an autochthonous name, whereas all those in east Africa have specially created book names. Harmonization would be desirable and it is the ornithologists of Zambia and Zimbabwe Rhodesia who can best do this since they live amongst a transitional avifauna and names from both traditions are in accepted usage there.

With the decline in importance and excitement of basic faunal exploration came a rise in enthusiasm for life history studies. This was a widespread phenomenon on both sides of the North Atlantic at the time and greatly influenced workers in Africa and Australia. Similarly, the development of ecological approaches to bird study in Europe found followers, particularly Moreau and Winterbottom, who took up the themes in Africa. This was in part due to the visits of David Lack in 1934 and John Emlen in the 1950's, their approach to problems in the weaver genus *Euplectes* being more ecologically orientated than that of contemporary African workers.

After the war a bird ringing (banding) scheme was started in South Africa which has produced many results of great interest, the rings having also been widely used in Malawi and Zambia and even as far north as Uganda. The initial impetus was the hope, since realised, of recovering Palaearctic migrants on their breeding grounds. Latterly, more attention has been given to studies of more or less resident faunas from which data on plumage development, moult, change of eye colour, weight, longevity, mate and breeding site fidelity etc, have been obtained.

Also after the war a nest record card scheme was started in South Africa, a scheme which now has c. 100,000 cards with perhaps twice as many nests recorded on them. Several papers have been published arising in whole or in part from this body of data.

The late 1960's saw the rise of the university approach to bird study, testing a theory by investigating what a bird does in a particular situation. This approach engenders a great increase in quantification, tables and statistics, with the consequence that the relatively small number of people interested in birds in South Africa, most of whom have had no training in zoology, find the resulting papers difficult to understand and enjoy. This problem is less serious in the North Atlantic countries where there are far more people interested at different levels in birds, so that it is practicable to have societies and journals catering for different levels of interests and sophistication of study.

So far, southern Africa has not lost a breeding species of bird due to recent human activity. Nonetheless, forest and bush clearing and swamp draining have proceeded apace these last 20 years and many local populations have been eliminated by destruction of their breeding habitat. Some awareness of the conservation risks involved is now widespread among the literate but few projects are altered because they involve avoidable habitat destruction. Many feel that the creation of some national parks in which natural habitats and their faunas can continue undisturbed is all that is needed. Much land only used for cultivation at long intervals is now used on a more or less permanent basis. Since most of it is of doubtful fertility, the human and non-human faunas resident there are not in a state of equilibrium and catastrophes like those in the west African Sahel are to be expected. Every government believes that it must provide for its people's feeding and livelihood and nature conservation is not likely to prevail very often in cases of competing claims for land use in Africa.

Besides the successive waves of interest and approach to the study of southern African birds of the last 50 years, work proceeds throughout the area on the older lines, since these have not been fully exploited. Faunal exploration, including subspeciation continues; life histories of the great majority of African birds and the full ecological requirements of most species are as yet unknown, and the testing of hypotheses by investigating birds has hardly begun. The next major step must be to involve black Africans for their own interest in ornithology so that it ceases its dependence on resident and expatriate whites.

It is always invidious to draw attention to the names of those who have made substantial contribution to our knowledge of the birds of a country and I shall sidestep the problem by confining my remarks for the most part to writers of books, the most substantial and permanent proof of work done. Tanzania was Reg Moreau's stamping ground 1928-1946, and its central position on the east side of Africa must have been partly responsible for the development of his Africa wide interests, resulting in his two major works, *The Bird Faunas of Africa and its Islands* and *The Palaearctic-African Bird Migration Systems*. Reg Moreau was the nearest thing to an internationally renowned theoretician that Africa has produced.

Malawi has had two checklists, one in 1953 by Con Benson and one in 1977 by Con & Molly Benson. The first of these was particularly important since it was the first checklist anywhere to go beyond names, authorities and a generalized statement on range by providing data on precise range, habitat, breeding season and the like with supporting references. Zambia has done even better in that it has had two checklists, one in 1949 by White & Winterbottom and another in 1957 by Benson & White, to be followed in 1971 by *The Birds of Zambia* by Benson, Brooke, Dowsett & Irwin. Angola had its checklist by Mel Traylor published in 1963.

There is an increase in written work once the Zambezi River is crossed. While Frade's *Catalogo das Aves de Mocambique* covered the whole country (but only by citing published references), Clancey's *Handlist of the Birds of Southern Mocambique* was a list on the Benson model, extensively illustrated in colour by the author. The periodical literature on Zimbabwe Rhodesia is rich (it has its own journal, the *Honeyguide*) but the only summary is Smithers, Irwin and Paterson's 1957 checklist. However, Irwin has a *Birds of Zimbabwe* in an advanced stage of preparation. Botswana got its checklist from Smithers in 1964, and Namibia from Winterbottom in 1971. South Africa has had three checklists, Vincent's, Clancey's and Winterbottom *et al*'s. More to the point, it has had Maclachlan & Liversidge's 1957 *Roberts' Birds of South Africa*, a superb summary of all that was then known of South African birds. The 1970 and 1978 revisions have not maintained the standard originally set. Mention may also be made of Skead's *Canaries, Seedeaters and Buntings of Southern Africa*, his *Sunbirds of Southern Africa* and Clancey's *Birds of Natal and Zululand*. One must regretfully remark that there is no acceptably competent field guide to the birds of any part of Subsaharan or Afrotropical Africa.

There are many reasons for the upsurge in work on southern African birds since the war, four of which seem particularly important. First, Reay

Smithers, Rhodesia's Director of National Museums, encouraged the serious minded to study birds and other classes of animals and made museum facilities, chiefly the study collections and library, readily available to those who needed them. Secondly, Gerrie Broekhuysen, at the University of Cape Town, was the first African academic with a strong interest in birds and those who studied zoology under him were often influenced in this direction. Thirdly, the FitzPatrick Institute was founded in 1959 at the University of Cape Town by Cecily Niven in honour of her father. The first Director was Jack Winterbottom and he was succeeded in 1971 by Roy Siegfried. It is the only institute of ornithology in Africa, or indeed anywhere, south of the equator and while it is mainly orientated to an academic approach, it covers all the levels that were discussed above. It has also been the leading proponent in South Africa of the approach that birds are only intelligible as parts of ecosystems. Finally, the *Ostrich*, which has had a succession of editors (Jack Vincent, Gerrie Broekhuysen, Bunty Rowan, Alan Kemp and the present incumbent, Gordon Maclean) who have sought to improve the standard of its form and contents and have been largely successful in this.

The latest development in South Africa is the increasing attention paid to seabird studies, not only in the continental shelf but also on Marion Island far to the south, an island which has the second richest fauna of breeding seabirds in the Southern Ocean.

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Fifty years of ornithology in the Malagasy Faunal Region

by C. W. Benson

The Malagasy Region is taken as the area in the western Indian Ocean from Madagascar and the Mascarene Islands north to the Seychelles and the Chagos Archipelago, sufficiently distinct from Africa to merit regional rank (Moreau, *in* Thomson (Ed.) *New Dict. Birds* 1964: 443–444). There is a survey of work in the Indian Ocean as a whole by Bourne (*J. Marine Biol. Assoc. India* 14(2), 1972: 609–627), while for a general bibliography (including birds) of the northern part of the more restricted area here considered see Peters & Lionnet (*Atoll Res. Bull.* 165, 1973). Consideration of space precludes coverage of but a fraction of the recent literature, although as many key references as possible are included. Since we are dealing with discrete islands or archipelagos, some division is necessary.

Madagascar

By far the largest area is Madagascar. The modern era began with the Franco-Anglo-American Expedition of 1929–32, under the aegis respectively of J. Delacour, Dr P. R. Lowe and Dr L. C. Sanford. The result was a series of short notes and reports, culminating in the paper by Rand (*Bull. Amer. Mus. Nat. Hist.* 72, 1936: 143–499). It is a mine of information on distribution and ecology, although collecting in the 19th century had provided a fairly complete inventory of species. Even so, since 1930 six species have been described for the first time, namely *Randia pseudozosterops* and *Newtonia* *archboldi* Delacour & Berlioz (1931), *N. fanovanae* Gyldenstolpe (1933), *Neodrepanis hypoxantha* Salomonsen (1933), *Monticola bensoni* Farkas (1971) and *Phyllastrephus apperti* Colston (1972). *Newtonia fanovanae* is still known from but a single specimen – maybe it lives in the canopy of dense evergreen forest, and escapes notice. This may also apply to the *Neodrepanis,* of which there is no published evidence of its existence since 1929 (Benson, *Bull. Brit. Orn. Cl.* 1974: 141–143).

The general characteristics of the land birds have been discussed by Moreau (*The Bird Faunas of Africa and its Islands*, 1966: 327–344) and by Dorst (*in* Battistini & Richard-Vindard (Eds), *Biogeography and Ecology in Madagascar,* 1972: 615–627). As many as 5 endemic families still extant are recognised by some authors, and many more such genera and species. Most of their ancestors arrived by flying across the Mozambique Channel, but some came from Asia, island-hopping being aided by such archipelagos as the Seychelles. A point not brought out by Moreau or Dorst is that the ratite family, the Aepyornithidae, which may have survived until 400 years ago, did not arrive by flying. Probably it existed before Madagascar was separated from Africa about the late Cretaceous (Cracraft, *J. Zool. Lond.* 169, 1973: 475, 527; *Ibis*, 1974: 514).

Both Moreau and Dorst emphasise Madagascar's strong ecological diversity. In the east the rainfall is very high (up to 3500 mm *per annum* in the northeast), and the original vegetation was dense evergreen forest (much of which has been cleared for cultivation). In the west, separated from the east by a spine of highlands, now denuded of forest, the rainfall is much less, and savanna predominates. In the southwest annual rainfall is less than 500 mm, and sub-desert scrub prevails. This diversity would have favoured speciation within the island, as exemplified by the endemic Vangidae (12 species) and the endemic genus *Coua* (Cuculidae, 10 species).

Between the international expedition of 1929–32 and World War II, little field work was undertaken, except by L. Lavauden, who furthermore published in 1937 a supplement to Milne-Edwards & Grandidier's voluminous work of 1882–85. There is one paper resulting from military service (V. D. van Someren, *Ibis* 1947: 235–267). Since the war there has been a revival, thanks especially to O. Appert, P. Griveaud, P. Malzy, Ph. Milon, R. Paulian, R. P. Paulian and J. Salvan. In 1973 there appeared the *Faune de Madagascar. Oiseaux*, by Milon, Petter & Randrianasolo. It is fully illustrated and useful as a field identification guide, but too bulky for the pocket. The results of some further work, by Charles-Dominique, Dhondt, also by Colebrook-Robjent, Williams and myself, have been published in *L'Oiseau et R.F.O.,* 1975–77. The atlases of speciation in African birds (Hall & Moreau 1970 and Snow (Ed.) 1978) shed light on the origins of some species. Further work, by G. S. Keith, A. D. Forbes-Watson and D. A. Turner, for the most part still awaits publication. Conservation of the habitat of this unique avifauna is an outstandingly pressing problem – particularly the forests of the humid east, since forest birds are singularly ill-adapted to withstand environmental changes.

The Mascarene Islands

Réunion, Mauritius and Rodriguez are famous for the endemic family, the Raphidae (dodos and solitaires – if in fact 3 discrete families are not involved – cf. Storer, *Auk* 1970: 369–370). Each island had its own flightless form (the Réunion one only known from illustrations and travellers' accounts), all extinct for more than 200 years, killed off by meat-hungry sailors. Many other species have long disappeared, and are known only from bones. The worst sufferers were Mauritius and Rodriguez.

Even now the survival of some species is the cause of grave anxiety, for example on Mauritius the endemic kestrel *Falco punctatus* and on Rodriguez the endemic fody *Foudia flavicans*. The avifauna of Mauritius in particular now, indeed, consists largely of introduced species. The ecology and evolution of the white-eyes of Réunion and Mauritius, fortunately still not endangered, have been studied in a series of papers by R. W. Storer and F. B. Gill, most recently by Gill (*Auk* 1971: 35–60; *A.O.U. Monogr.* 12, 1973). On Réunion, the endemic harrier has been studied by Clouet (*L'Oiseau et R.F.O.* 1978: 95–106, as *Circus aeruginosus maillardi*). There is a general account of the islands by Staub (*Birds of the Mascarenes and Saint Brandon*, 1976). During 1974–75 there was a B.O.U. expedition to the Mascarenes, organised by P. Hogg and led by A. S. Cheke, the other members being G. S. Cowles, Mrs. J. Horne and S. A. Temple (studying respectively fossil material, vocalisations and endangered species). The results will surely shed much further light on the avifauna of the islands, and are to be published as a special number of the *Ibis* in 1980.

Comoro Islands

Virtually no information had been forthcoming from the Comoro Islands since the 19th century, and so as part of the B.O.U. centenary celebrations an expedition went there in 1958, the members being P. Griveaud, my wife and myself. The results were published in 1960 (Benson, *Ibis* 103b: 5–106). Despite forest destruction (worst on Anjouan), no evidence was obtained of any extinctions, except perhaps for 2 endemic subspecies on Anjouan. Considerable ecological information was collected (little existed previously). One new species of warbler, *Nesillas mariae*, was described from Moheli, and a probable new species of scops owl, *Otus pauliani*, from Grand Comoro, though the status of the owl requires confirmation from tape-recordings of its voice (Marshall, *A.O.U. Monogr.* 25, 1978: 18). Further short visits have included one by Forbes-Watson (*Atoll. Res. Bull.* 128, 1969) and Salvan (*Alauda* 1972: 18–22).

Aldabra

This is the least disturbed elevated-limestone island in the Indian Ocean. In 1965 plans were made by the British Government for an air staging post on the atoll – in the event the proposal was dropped in 1967 for financial reasons, but not before considerable outcry. The Royal Society made proposals for the preservation of Aldabra for scientific study, organised a series of expeditions directed by Dr. D. R. Stoddart, and by 1971 had completed a research station, to be handed over in 1980 to the Government of the Seychelles, of which Aldabra is now politically a part. Ornithology has figured prominently in these activities. The first workers were A. W. Diamond (sea birds), M. J. Penny (land and shore birds) and myself (land birds): for reports, see *Phil. Trans. Roy. Soc.* B260, 1971: 417–571. In addition, certain species have received special attention: *Phaethon* spp. (Diamond, *Auk*

1975: 16–39); *Sula sula* (Diamond, *Ardea* 1974: 196–218); *Fregata* spp. (Diamond, *Ibis* 1975: 302–323); *Dryolimnas cuvieri* (most recently, Huxley & Wilkinson, *Ibis* 1979: 265–273); *Centropus toulou* (Frith, *Ostrich* 1975: 251-257; R. Woodell, *Ibis* 1976: 263–268); *Foudia eminentissima* (Frith, *Ibis* 1976: 155–178). Publication is awaited (in *Phil. Trans. Roy. Soc.* B286) of a study by R. P. Prys-Jones of *Nesillas aldabranus*, only known by a few pairs on a limited area, and only discovered in 1967. Other studies include a review of the species of *Ibidoecus* parasitic on *Threskiornis*, including *T. aethiopica abbotti* endemic to Aldabra (Clay, *Syst. Ent.* 1, 1976: 1–7); the vegetation of sea bird colonies (Gillham, *Atoll Res. Bull.* 200, 1977); and descriptions of a new duck and small procellarid, from pleistocene remains (Harrison & Walker, *J. Nat. Hist.* 12, 1978: 7–14). The birds of certain islands east to *Farquhar* and northeast to the *Amirante* Islands have been surveyed in Stoddart (Ed.) (*Atoll Res. Bull.* 136, 1970), and of the *Iles Glorieuses* by Benson, Beamish, Jouanin, Salvan & Watson (*ibid.* 176, 1975), while for an account of the former existence of *Dryolimnas cuvieri* on Astove, in the Aldabra Archipelago, see Stoddart (*Bull. Brit. Orn. Cl.* 1971: 145–146).

Seychelles Archipelago

Conservation and research have evoked as much concern in the Seychelles as on Aldabra. Except for the 2 northern outliers, Bird and Dennis Islands, the components are of granitic origin. They were inaccessible from the outside world by air until 1971, since when a flourishing tourist industry has developed, also enabling the 4th Pan-African Ornithological Congress to be held on Mahé in 1976; but clearly this has accentuated the conservation problem. Two endemics, *Psittacula eupatria wardi* and *Zosterops mayottensis semiflava*, had apparently become extinct in the 1890's, while the stock of the endemic *Streptopelia picturata rostrata* has been so diluted by the introduction of *S. p. picturata* as to only survive more or less pure on Cousin and Cousine. Recent moves include the purchase of Cousin in 1968, from funds raised through the International Council for Bird Preservation and the World Wildlife Fund, and of Aride in 1973 by C. Cadbury for the Society for the Promotion of Nature Conservation. Both islands are important as sanctuaries for breeding sea birds, Cousin also as a refuge for *Bebrornis seychellensis*, which is increasing in numbers, as is *Terpsiphone corvina* under protection on La Digue. The most recent report on conservation in the Seychelles, by the I.C.B.P., is no. 5, June 1976.

Penny's book *The Birds of Seychelles* (1974) is the only pocket field guide for any part of the Malagasy Region, and actually takes in the islands as far south as the Farquhar and Aldabra groups. The only land birds in the granitic Seychelles to have received special study before this book was in preparation were the 2 *Foudia* spp. (Crook, *Ibis* 1961: 517–548). The following further studies, albeit briefer, deserve mention: *Bubulcus ibis* (Feare, *Ibis* 1975: 388); *Falco araea* (Feare, Temple & Procter, *Ibis* 1974: 548–551); *Hypsipetes crassirostris* (Greig-Smith, *Ostrich* 1979: 45–58); *Copsychus seychellarum* (Wilson & Wilson, *Bull. Brit. Orn. Cl.* 1978: 15–21); *Terpsiphone corvina* (Fraser, *Ibis* 1972: 399–401; Greig-Smith, *Bull. Brit. Orn. Cl.* 1978: 41–43); *Acridotheres tristis* (Feare, *J. Bombay Nat. Hist. Soc.* 1976: 525–527); *Zosterops modesta* (most recently, Greig-Smith, *Ibis* 1979: 344–348). There has also been much information on migrants, thus see Turner & Forbes-Watson

(*Bull. Brit. Orn. Cl.* 1976: 57–58); Penry (*ibid.* 1977: 120–121); Ebenhard (*ibid.* 1979: 39–40); Feare (*ibid.* 1979: 75–77); Feare & High (*Ibis* 1977: 323–338). Feare (*Ibis* 1974: 543–545) has discussed mangrove utilization. For 40 years there has been concern that the farming of the eggs of the tern *Sterna fuscata,* collected and sold commercially on Mahé, was being carried to excess. In fact the largest source of supply is not in the Seychelles proper (where the largest colonies are on Bird Island and Aride, now protected by the owners), but on Desneufs in the Amirantes. The problem has been lately thoroughly studied by Feare (most recently *Biol. Cons.* 10, 1976: 169–181). Various other terns, as well as 2 *Puffinus* spp. and *Phaethon lepturus*, breed in the Seychelles. On the other hand *Sula dactylatra* and *S. leucogaster,* which formerly bred on Bird Island, no longer do so. Sadly, this is merely part of a general decline amongst the boobies in the western Indian Ocean (Feare, *Biol. Cons.* 14, 1978: 295–305). For certain misconceptions about sea birds in Penny's book (particularly the occurrence of *Stern balaenarum*), see Feare & Bourne (*Ostrich* 1978: 64–66). Due for publication in 1980, Stoddart (Ed.) (*Biogeography and Ecology of the Seychelles Islands*) will contain papers on both land and sea birds.

Chagos Archipelago

The birds of these islands have been discussed by Bourne (*Atoll Res. Bull.* 149, 1971: 175–207). Sea birds predominate, and discounting *Butorides striatus* there is no land bird which might not have been man-introduced. Hutson (*ibid.* 175, 1975) records observations confined to Diego Garcia.

The pelagic distribution of sea birds in the western Indian Ocean has been studied by Bailey (*Ibis* 1968: 493-519), from his observations during the International Indian Ocean Expedition on board the "Discovery" in 1963 and 1964. Covering the same area, this author (*J. Marine Biol. Assoc. India* 14(2), 1972: 628–642) has discussed their breeding seasons, species composition, density at sea and migrations.

One may conclude by stressing the increasing activity in the Malagasy Region since the turn of the century. The following figures of publications relevant are some index: 1900–29, 64; 1930–39, 60; 1940–49, 30; 1950–59, 60; 1960–69, 97; 1970–79, 169. The low figure for 1940–49 is largely attributable to World War II.

Acknowledgements: I wish to thank Miss Phyllis Barclay-Smith for certain literature; and Dr. C. J. Feare for commenting on the manuscript.

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Indian Ornithology: The Current Trends

by Salim Ali

A general interest in birds as pets or for sport was inherent in mediaeval India, though by and large perhaps as rather an elitist activity. Some of the noblemen of the Moghul court and the emperors themselves, particularly Babur the founder of the dynasty, and his great grandson Jahangir, were accomplished naturalists as their own memoirs and contemporary records of

European travellers abundantly show. Many of Jahangir's observations are so scientifically accurate that they might have been made by a discerning birdwatcher today. But ornithology as currently understood really began and developed as a scientific discipline during the British connection. Despite some sporadic collecting of skins by early European travellers and servants of the East India Company in various parts of the country, and publication of their reports in the *Journal of the Asiatic Society of Bengal, Proceedings of the Zoological Society of London,* and elsewhere, Indian ornithology really started with the advent in 1864 of the 2 volumes of *Birds of India* by T. C. Jerdon, a surgeon in the Madras Army of the E.I.C., which epitomized all the knowledge up to that period. Most of the basic information on Indian birds that we possess has accrued between that period and the turn of the century, predominantly through the monumental labours in field and museum of such outstanding naturalists as Edward Blyth, Brian Houghton Hodgson, and Allan Octavian Hume. In my estimation the most remarkable among these three was Hume, both for his humanity and as a savant of ornithology. While still an active Civil Servant he found time from his multifarious official duties and preoccupations to amass a gargantuan collection of some 60,000 bird skins from far flung corners of the subcontinent, aided in part by the wide network of protegés he had built up through voluminous correspondence, advice and guidance. Over and above all this Hume found the time to edit his journal of Indian ornithology bearing the somewhat eccentric title of *Stray Feathers.* The 11 volumes of this publication which appeared between 1873 and 1888, before it closed down, are a veritable gold mine for the ornithologist, and indispensable for every serious student of Indian birds. When *Stray Feathers* ceased publication many of its former contributors diverted their writings to *The Ibis* and to the *Journal of the Bombay Natural History Society* (JBNHS) which had made its debut in 1886. The latter is now in its 75th volume and has become increasingly important in disseminating knowledge about Indian birds.

Indian ornithology received its second definitive boost after Jerdon with the publication, between 1889 and 1898, of the 4 volumes on birds by E. W. Oates and W. T. Blanford in the *Fauna of British India* series sponsored by the Secretary of State for India. Like its predecessor it brought together and updated all the advances in knowledge resulting from the extensive explorations in the field and taxonomic research in the museum during the intervening 27 years. This renewed fillip was clearly responsible for producing the rash of outstanding field ornithologists that distinguished the next 33 years up to the publication of volume 1 of the second edition of the *Fauna of British India* series on birds – the *New Fauna* for short – by E. C. Stuart Baker, himself an illustrious product of that period. The 6 main volumes of the *New Fauna* were completed in 1930. They in turn showed up many lacunae in our knowledge, especially concerning areas in the subcontinent which had been imperfectly explored or not at all: areas such as the Eastern Ghats and the territories of many of the princely states like Hyderabad and Gwalior, in the centre of the Peninsula, Mysore, Travancore and Cochin in the south, Baroda, Kutch and the Kathiawar states in the west, Jodhpur and Bahawalpur in Rajasthan, and smaller states in Orissa and elsewhere which together constituted a very considerable part of the British Indian Empire.

Precise knowledge of the spatial distribution of even the commoner birds within the subcontinent was lacking. This knowledge had become crucial in view of the concept of subspecies, which had been introduced by Stuart Baker himself for the first time in Indian ornithology. In fact one of the main criticisms of the *New Fauna* was that the author had assigned subspecies arbitrarily to areas whence adequate material was unavailable in museums for a comparative study. To rectify this deficiency the Bombay Natural History Society, at the instigation of Hugh Whistler, one of the most active British workers on Indian birds at the time, and with the financial generosity of Mr Arthur S. Vernay, an American business magnate, organized an ornithological field survey of the Eastern Ghats. The survey collections, meticulously studied and reported on by Whistler and Kinnear (later Sir Norman) with the collaboration of Dr C. B. Ticehurst in the *Journal of the Bombay Natural History Society* (1930–37), showed up convincingly the importance of this type of exploration and further highlighted the remaining and additional lacunae. Thus followed a series of similar bird surveys – organized by the Bombay Natural History Society and funded chiefly by the States concerned, which by the next 20 years had covered practically all the unworked areas of the subcontinent, furnishing a more comprehensive picture of the avifauna.

Up to the time of the First World War (1914) practically all the work on Indian birds had been done by Britishers, chiefly colonial civil and military officials, indigo and coffee planters and the like. Names of the more prominent among these are chronicled in the Introduction to Vol. 1 of *Handbook of the Birds of India and Pakistan* (S. Ali & S. Dillon Ripley 1969). Between the First World War and the Second (1939) most ornithologists' names are still British, though a falling off of interest in Indian birds in favour of Africa is already perceptible. With the deaths of Dr. C. B. Ticehurst in 1941 and his close friend and collaborator H. Whistler in 1943 – two of the last and most outstanding contributors to Indian bird lore – the British era of Indian ornithology virtually came to an end. Also discernible during this period is the emergence of first a few sporadic, and then an increasing number of Indian names among the ornithological contributors to the *Journal of the Bombay Natural History Society*. In the pre-Independence period, i.e. between the end of World War II and 1947, the focus of British ornithological interest had shifted more or less completely to Africa. The only foreigner who has contributed steadily and substantially since that time is my colleague and co-author, the American Dr. S. Dillon Ripley. The trend since then has been mainly towards a more intensive exploration of unworked areas, and field studies of individual species, as well as of such problems as Migration through large scale bird ringing, and other problems of an ecological nature. Most of the taxonomical work involved has also been done by Indian ornithologists, with the noted exception of Dr. Ripley, who has been active both in the museum and the field since the last War, and whose *Synopsis of the Birds of India and Pakistan*, 1961 (2nd edition in preparation) is a basic and definitive contribution. *Synopsis* forms the taxonomical basis of the *Handbook of the Birds of India and Pakistan* by Sálim Ali & S. Dillon Ripley, published by Oxford University Press between 1968 and 1974. This comprehensive manual is the 'spiritual' successor to the *New Fauna* and embodies within its 10 volumes all the additions and corrections accrued during the 30 years since Stuart Baker's last volume. By updating available information, laying special emphasis on ecology, and providing identification keys and colour illustrations for most of the 1200 odd species (plus subspecies) that it describes, the *Handbook* purports to serve the museum scientist as well as the serious birdwatcher.

Birdwatching as a hobby has never enjoyed much popularity among Indians. Religious sentiment against taking life has inhibited the juvenile collection of bird skins and eggs as has been so popular among schoolboys in the West. This, combined with the lack of encouragement in the home and of inspiring nature study instruction in school, where most teachers are themselves ignorant in bird lore, has tended to dampen the spirit of enquiry in Indian children. Another serious impediment was that until quite recently illustrated bird books were virtually non-existent, thus discouraging even self-teaching. Whistler's *Popular Handbook of Indian Birds* which first appeared in 1928, followed by further editions in 1935 and 1941, was perhaps the greatest influence in awakening an interest in birds among the Indian public, despite the fact that it contains so few colour illustrations. For a beginner, colour illustrations are indispensable. I vividly recall my own difficulties as a struggling novice 70 years ago without such aid. A further 'leap foward' in popular interest in birds came after the publication by the Bombay Natural History Society of Sálim Ali's *The Book of Indian Birds* in 1941, which carried coloured illustrations of all the 181 commoner Indian species that it described. Popular interest has increased and multiplied with each successive edition of *The Book*, so that it is now encouragingly widespread and growing, particularly among the middle class young. The eleventh edition contains colour pictures and descriptions of 296 species found in the plains and hills of peninsular India, south of the Himalayas.

Fortunately for Indian students the foundation for study of properly classified reference material is available in the comprehensive collections of the Zoological Survey of India, Calcutta, and the Bombay Natural History Society. Further *ad hoc* specimen collection is now unnecessary except in a few remote and unexplored pockets of the country and of rare and little known forms. There would seem to be comparatively little scope for further taxonomical work on Indian birds, for which, in any case, the major foreign museums are perhaps better equipped. Happily the emphasis has now turned to ecology and ethology, breeding biology, population dynamics, conservation, and studies that have essentially to do with the living bird. The economic importance of birds in a country so largely dependent on agriculture and forestry is just beginning to be adequately appreciated, and centres for research in economic ornithology have been set up in some of the recently started agricultural universities. The Bombay Natural History Society, with its exceptional facilities in the way of its bird collection and ornithological library, is recognized by the University of Bombay as a guiding institution for postgraduate research in field ornithology, and some highly commendable research projects have been completed by its students. It is hoped that more and more competent teachers will thus become available for conducting ornithological courses in our schools and colleges, and for providing trained personnel for our expanding Nature Conservation and Wildlife Management programmes.

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The state of ornithology in eastern Asia

by Earl of Cranbrook

I take as my alloted geographical limits that sector of Asia lying south of about 45°N and east of about 95°E (but not including far eastern U.S.S.R.), bounded on its Pacific flank by the outer islands of Japan, the Philippines and Indonesia. This is a region marked by great diversity in the natural environment and wide variety in the history and social systems of its human inhabitants. It is also a region within which war, revolution or military insurgency have been prevalent, locally or at large, for the past 40 years or more and emergent nationalism has tended too often to inhibit communication across frontiers. Much has occurred to impede the advance of ornithology and few common trends can be identified.

In this region, only Japan can show the full range of ornithological activities and supporting institutions familiar to us in the United Kingdom. Widespread popular appreciation of birds exists, reflected in a literature covering aesthetics, conservation, field identification, etc. Discs of bird song are available commercially. There is an academically oriented Ornithological Society, founded in 1912, which publishes the journal *Tori* and has produced 5 successive editions of a national checklist. The latest revision of this checklist, which took 7 years to prepare, was supported by the goodwill of a publishing company and a grant in aid from the Ministry of Education. It consists of Japanese and English language texts, separately bound, with a loose *Addenda and corrigenda* accompanying the second printing (Ornithological Society of Japan 1975).

Birds have been ringed in Japan since 1924. Initially attention was concentrated on waterfowl but — as appropriate in the country which gave the mist-net to the world — subsequent ringing studies have involved birds of all kinds. Current ornithological research is sponsored by organisations including government agencies and universities. Also active is the Yamashina Institute for Ornithology and Zoology, a research institution which owes its foundation to private charity and, among other things, houses an important museum collection.

Before World War II, Japanese ornithologists contributed significantly to studies of the birds of more southerly parts of the region (e.g., Taiwan, Philippines, Java), playing a part comparable to that of ornithologists of Europe in their counterpart tropical zone (i.e., Africa). Since the war, Japan has not yet re-emerged in this role. In the main, in tropical southeast Asia, the innovative work of recent years has been initiated by 'expatriates of non-Asian domicile, temporarily or more or less enduringly resident in the region.

It was from a base in Japan that, in 1963, one such venture — the Migratory Animal Pathological Survey (MAPS) — was launched (McClure 1974). Although the ultimate source of funds at times raised political awkwardness (see Bourne 1975, for example), through 18 institutes or individuals in 10 nations of eastern Asia (as defined above) MAPS successfully promoted ornithological research based on bird-ringing. During 7 years of funding, participants ringed 1,165,288 birds of 1218 species. Apart from the records of movements provided by over 6000 recoveries, the handling of so many birds of itself yielded a quantity of papers on many aspects of ornithology.

In Korea, the pioneer national ornithologist was Won Hong-Koo (1887-1970). After the division of his country, Dr. Won remained in the north, continuing his research from Pyongyang. In South Korea, MAPS funds assisted existing (and still continuing) ornithological research led by his son, Won Pyong-Oh, director of the Institute of Ornithology at Kyung Hee University, Seoul. Won Pyong-Oh, with the support of the Forest Research Institute, published in 1969 an annotated checklist (in Korean) and in 1971, jointly with the British diplomat M. E. J. Gore, a bilingual handbook of the birds of Korea. Despite these developments, in both Koreas ornithology remains an academic pursuit rather than a popular movement.

This is true also in China where, according to the estimate of Professor Cheng Tso-Hsin (=Zheng Zuoxin), director of the ornithological division of the Peking Zoological Research Institute, Chinese Academy of Sciences, there are 50-100 professional ornithologists and perhaps 200-300 amateurs. Because there is no national ornithological organisation, even these figures are conjectural (Cheng 1979a). Professor Cheng's own considerable contribution, in collaboration with the staff of his division, has followed the traditions of taxonomic geography. Of the main faunistic works produced, Cheng (1973) is available in English but a 1964 checklist (Cheng 1976) and the 2 volumes of the handbook so far published (Cheng 1978, 1979b) exist only in Chinese. Ornithologists unable to read Chinese script can turn to the illustrated work on the non-passerines by F. Etchécopar and the late F. Hüe (1978); no passerine companion volume is yet available. Vaurie (1972) has treated the fauna of Tibet (=Xizang), an area which is at present the subject of multi-disciplinary investigation; preliminary results (including ornithological studies) will be reported at a symposium sponsored by Academia Sinica, to be held in Peking in May 1980.

For Taiwan, non-nationals have written the most comprehensive classical treatment of the island's birds (Hachisuka & Udagawa 1950-51) and recent pocket guides (Severinghaus, Kang & Alexander 1970, Severinghaus & Blackshaw 1976), with national collaborators in the two last instances. In the 1976 *New Guide*, the authors wrote of an increasing interest in native wild birds among many sectors of the community, including scientists and students, government agencies and the public in general: 'Bird-watching is a popular form of outdoor recreation and outdoor recreation is an increasingly important industry in Taiwan'.

In Hong Kong, for years ornithology has been the pursuit of a small body of enthusiasts. A natural history society existed until 1941, publishing a journal. After the war, the Hong Kong Bird-Watching Society was formed and, since 1958, has published an annual report. The major faunistic work is that of Herklots (1953, reprinted 1965). This has been updated by successive editions of an annotated checklist published by H.K.B.W.S., in 1960, 1966 and — the third and most recent revision — in 1975 by M. A. Webster. Webster (1976) has also produced a pocket guide with English text.

The islands of the Philippines have attracted many ornithological expeditions. The U.S. administration also built up local collections, unfortunately destroyed in World War II. The war was, however, the stimulus for a comprehensive guide in the Pacific World series (Delacour & Mayr 1946), based chiefly on material in American museums. Among local ornithologists, the late C. Manuel, G. Alcasid and D. S. Rabor were prominent post-war;

the two last named participated in the MAPS programme. The task of preparing an updated review of the avifauna was then undertaken by a comparative new-comer, J. E. duPont (1971, 1976). His handsome book is essentially an illustrated handlist, lacking information on habits or behaviour.

In the tragic region of Indochina, recent years have provided few opportunities for ornithological study. Service personnel with the U.S. and allied forces included several people with ornithological interests, and Wildash (1968) took advantage of a diplomatic posting to compile a handbook of the birds of South Vietnam, listing 586 species. The region is also covered by the profusely illustrated guide by King, Woodcock and Dickinson (1975), which treats the whole of continental S. E. Asia.

Burma, likewise covered by King *et al.* (1975), has as yet no indigenous school of ornithology, although leading personalities, including the head of state, take a general interest in wildlife. Fortunately, Smythies (1953) brought together all published (and many otherwise unpublished) observations from the period before 1948. In time, this attractive book (now out of print) will provide a sound base on which local ornithologists will be able to build.

Lying between Burma and Indochina, and stretching from over 20°N to below 6°N, geographical factors give Thailand a rich and varied avifauna, currently numbered at 849 species. This drew the attention of the late H. G. Deignan, whose studies culminated in a checklist (1963). His publications provided the systematic groundwork on which the local naturalist and conservationist, Boonsong Lekagul, based his first *Bird Guide of Thailand* (1968), a pocket guide of which he was both author and illustrator. In the preparation of the 84 plates depicting 828 species, the author drew on his own field work and his important private collection of bird skins. Additional impetus to ornithological research in Thailand was provided by the transfer of MAPS central office to SEATO headquarters in Bangkok, in 1966. With MAPS support, fieldwork initiated by B. King was continued and extended by the late Kitti Thonglongya, at the Applied Scientific Research Corporation of Thailand (ASRCT). In 1968, Kitti enjoyed the unusual experience of trapping a distinctive (and, on zoogeographical grounds, unexpected) new bird species, a river martin of a genus (*Pseudochelidon*) previously unknown outside Africa. Records of distribution and habits of birds deriving from work done during this period by the professionals at SEATO, ASRCT and the Royal Thai Forest Department, together with amateurs, were incorporated in the second edition of the *Bird Guide* (Lekagul & Cronin 1974). In Bangkok a small bird-club holds together the amateur interest.

The most southerly provinces of Thailand show zoogeographical affinity with the adjoining states of Peninsular Malaysia. This area (including also Singapore) was recognised as a faunistic unit by H. C. Robinson (1927) when defining the scope of his projected 5 volume *Birds of the Malay Peninsula.* After the appearance of the first 2 volumes the progress of this enterprise was interrupted by Robinson's death (in 1929), and after the next 2 by the death of his successor, F. N. Chasen (in 1942). The series was finally completed by Medway & Wells (1976) (see also Wells & Medway 1976). In this concluding volume, the authors reviewed the recent history of local ornithology. During the first dozen years after World War II, a handful of field ornithologists in Malaya and Singapore worked with high productivity, reporting their observations mainly in the *Bulletin* of the Raffles (later National) Museum, Singapore, or in the *Malayan Nature Journal*, organ of the Malayan Nature Society which had been formed shortly before the onset of war and was revived in 1947. The late C. A. Gibson-Hill's checklists (1949, 1950) were important publications, providing the taxonomic background for A. G. Glenister's book (1951, reprinted in 1953, 1956 and, with revisions, 1971). Mist-nets began to be used in significant numbers in 1958-59 and, with MAPS support, in 1963 a national bird-ringing project was established from a base in the then recently-founded University of Malaya. Since 1962, annual bird reports have been published in the *Malayan Nature Journal*. Today, at universities and research institutes in Peninsular Malaysia, ornithology is comparatively strong, involving for instance studies of single species, community ecology and energetics. Amateur participation is largely coordinated through state branches of the Malayan Nature Society or, as in Singapore, a specialised splinter group.

In 1972 the former Raffles Museum was closed as a centre for biological research and its reference collections were transferred to the care of the Department of Zoology, University of Singapore. Permanent housing for this material has yet to be provided. Included among these collections are the important series of bird skins obtained by Robinson, Chasen and their collaborators in the region of western Indonesia, Malaysia, Singapore and Brunei, i.e., the Sunda Shelf. Chasen's own studies led to the production of a regional checklist (1935). This in turn provided the taxonomic groundwork for another contribution in the Pacific World series, J. Delacour's (1947) *Birds of Malaysia*. In many parts of the Sunda region, this book has not yet been superceded.

Of the Greater Sunda Islands, only Borneo has been the subject of a more recent bird book. This was produced in Sarawak, where in 1947 the incoming British administration appointed a keen ornithologist (the late Tom Harrisson) to the curatorship of the museum at Kuching. During 1951-54, with the financial support of the late Loke Wan Tho — himself a productive amateur ornithologist — Sarawak museum staff expended considerable effort in amassing some 7300 bird skins. In 1956, B. E. Smythies catalogued this material. He subsequently drew on this collection, with others in overseas museums, to provide data for a checklist (1957) and book (1960, second edition in 1968) covering the avifauna of the entire island of Borneo. Currently there is no professional ornithologist at work in the Malaysian states of Sarawak or Sabah, nor in Brunei, but in all 3 states visitors and resident amateurs benefit from the collections held in the state museums and find outlets for publication in locally-produced journals (*Sarawak Museum Journal*, *Brunei Museum Journal*, and *Journal of the Sabah Society*).

In Indonesia, the collections at the Museum Zoologicum at Bogor survived both World War II and the turbulent years following the declaration of independence. The late A. Hoogerwerf (1949a) published a local guide, which is useful in the general region of western Java. Among other works, he also contributed two long papers on the oology of Java; these contain much information on breeding and breeding seasonality (Hoogerwerf 1949b, Hellebrekers & Hoogerwerf 1967). After his death, part of Hoogerwerf's collection went to Bogor, part to the Rijksmuseum van Natuurlijke Historie at Leiden, Netherlands. Here too was deposited the important collection of M. Bartels, which provided much of Hoogerwerf's data and has also been drawn upon by others, including the Indonesian ornithologist, S. Somadikarta. Somadikarta also took part in the MAPS programme, concentrating particularly on the nesting colonies of the cormorants and ardeids on Pulau Dua, Banten.

The zoological journal of the Bogor museum (*Treubia*) was revived after the war, and has published papers on local ornithology. The natural history society of Indonesia was also reconstituted for a time in the post-war period. Its journal *Tropische Natuur* was revived in 1952 and survived (from 1954 under the name *Penggemar Alam*) until 1961; the contents included ornithological notes. In 1973 a small, Jakarta-based ornithological society was formed and in 1975 the first number of its journal *Kukila* appeared. I have been told that a second number was issued in 1976 (W. G. Harvey, per comm.), but there has been no further news of this venture and the society is now apparently defunct. Simple ornithological texts, including a brief pocket guide to commoner birds, exist in the Indonesian national language but, despite the sporadic efforts of enthusiastic individuals, the level of ornithological activity in Java at present is very low and elsewhere in the Republic is negligible.

The late C. M. N. White left an unfinished checklist of the birds of Wallacea, i.e. Celebes (=Sulawesi) and the Moluccas. It is hoped that this work can be edited and published in due course by the B.O.U., since it would be of value to ornithologists working in the central region of Indonesia. At the eastern extreme of this huge island nation (and of the sector of the world under review), the birds of the province of Irian Jaya (i.e., western New Guinea) have been treated by Rand & Gilliard (1967).

I am grateful to M. E. J. Gore, W. G. Harvey, H. E. McClure and D. R. Wells for the provision of information included in this note or for comments on sections of it in draft. I apologise sincerely to those ornithologists of eastern Asia, known to me and unknown, who may feel that this very superficial review underrates (if not ignores) their particular contributions.

References:
Bourne, W. R. P. 1975. Research in India. *Nature*, Lond. 253: 86.
Chasen, F. N. 1935. A handlist of Malaysian birds. *Bull. Raffles Mus.* 15.
Cheng Tso-Hsin (ed.) 1963. China's economic fauna. JPRS translation.
— 1976. (*Distributional list of the birds of China*). Revised edn. Academy of Sciences, Peking. In Chinese.
— 1978. *Fauna Sinica, Aves. Vol.* 4: *Galliformes*. Science Press. Academia Sinica, Peking. In Chinese.
— 1979a. Ornithology in China. *Ibis* 121: 409-410.
— 1979b. *Fauna Sinica, Aves. Vol.* 2: *Anseriformes*. Science Press, Academia Sinica, Peking. In Chinese.
Deignan, H. G. 1963. Checklist of the birds of Thailand. *Bull. U.S. Natl. Mus.* 226.
Delacour, J. 1947. *Birds of Malaysia*. Macmillan: New York.
— & Mayr, E. 1946. *Birds of the Philippines*. Macmillan: New York.
duPont, J. E. 1971. *Philippine Birds*. Delaware Museum of Natural History.
— 1976. Additions and corrections to *Philippine Birds*. *Nemouria* 17.
Etchécopar, F. & Hüe, F. 1978. *Les oiseaux de Chine, de Mongolie et de Coree*. Editions du Pacifique: Tahiti & Paris.
Gibson-Hill, C. A. 1949. An annotated checklist of the birds of Malaya. *Bull. Raffles Mus.* 20.
— 1950. A checklist of the birds of Singapore Island. *Bull. Raffles Mus.* 21: 132-183.

Glenister, A. G. 1951. *The Birds of the Malay Peninsula, Singapore and Penang.* Oxford University Press.
Gore, M. E. J. & Won, P.-O. 1971. *The Birds of Korea.* Taewon Publishing Co. & C. E. Tuttle, Rutland, Vt., & Tokyo.
Hachisuka, M. & Udagawa, T. 1950-51. Contributions to the ornithology of Taiwan. *Quart. J. Taiwan Mus.* 3 (4): 187-264; 4 (1-2): 1-180.
Hellebrekers, W. P. J. & Hoogerwerf, A. 1967. A further contribution to our oological knowledge of the island of Java (Indonesia). *Zool. Verh., Leiden* 88.
Herklots, G. A. C. 1953. (2nd ed. 1967). *Hong Kong Birds.* South China Morning Post.
Hoogerwerf, A. 1949a. *De avifauna van Tjibodas en omgeving.* K. Plantentuin van Indonesia: Buitenzorg.
— 1949b. Bijdrage tot de oologie van Java. *Limosa* 22: 1-277.
King, B., Woodcock, M. & Dickinson, E. C. 1975. *A Field Guide to the Birds of South-east Asia.* Collins: London.
Lekagul, Boonsong, 1968. *Bird Guide of Thailand.* Association for the Conservation of Wildlife, Bangkok.
— & Cronin, E. W., Jr. 1974. *Bird Guide of Thailand.* 2nd (revised) edn. Association for the Conservation of Wildlife, Bangkok.
McClure, H. E. 1974. *Migration and Survival of the Birds of Asia.* SEATO, Bangkok.
Medway, Lord & Wells, D. R. 1976. *The Birds of the Malay Peninsula.* Vol. 5. Witherby, London.
Ornithological Society of Japan, 1975. *Checklist of Japanese Birds.* 2nd printing. Gakken Co: Tokyo.
Rand, A. L. & Gilliard, E. T. 1967. *Handbook of New Guinea Birds.* Weidenfeld and Nicolson: London.
Robinson, H. C. 1927. *The Birds of the Malay Peninsula. I: The Commoner birds.* Witherby: London.
Severinghaus, S. R. & Blackshaw, K. T. 1976. *A New Guide to the Birds of Taiwan.* Mei Ya Publications: Taipei.
—, Kang, K.-W. & Alexander, P. S. 1970. *A Guide to the Birds of Taiwan.* The China Post: Taipei.
Smythies, B. E. 1953. *The Birds of Burma.* 2nd edn. Oliver & Boyd: Edinburgh.
— 1957. An annotated checklist of the birds of Borneo. *Sarawak Mus. J.* 7: 523-818.
— 1960. *The Birds of Borneo.* Oliver & Boyd: Edinburgh.
Vaurie, C. 1972. *Tibet and its Birds.* Witherby: London.
Webster, M. 1976. *A New Guide to the Birds of Hong Kong.* Sino-American Publishing Co: Hong Kong
Wells, D. R. & Medway, Lord. 1976. Taxonomic and faunistic notes on birds of the Malay Peninsula. *Bull. Brit. Orn. Cl.* 96: 20-34.
Wildash, P. 1968. *Birds of South Vietnam.* C. E. Tuttle: Rutland, Vermont.

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Developments in Australian ornithology

by D. L. Serventy

Ornithology in Australia began with the arrival of the first settlers — in 1788 in the east with Governor Arthur Phillip's pioneers, and in 1829 in the west with Governor James Stirling's Swan River Settlement. But even prior to colonisation significant contributions to knowledge had been made by the naturalists attached to the great exploring expeditions — mainly British and French — in the latter years of the 18th Century. The first officials and settlers "exhibited a remarkable zest for natural history inquiry. Many had shared the vogue for natural history prevalent in England since the publication of Gilbert White's *Selborne* in 1789" and earlier publications. Thus the first major books published from these colonies were embellished with many fine hand-coloured engravings and useful text concerning

Australia's natural history. The early arrival of the eminent John Gould enabled the publication of magnificent volumes on the birds of Australia (from 1837 on).

However an indigenous school of local ornithologists was late in rising. After the passing of the first generation settlers their descendants were largely pre-occupied with problems of economic survival, allowing little leisure for cultural activity. Intellectual pursuits were mostly left to visitors and migrants. The first native-born ornithologists to achieve any degree of eminence were E. P. Ramsay, in Sydney, who began his bird-studying career in the 1850's, and A. J. Campbell, in Melbourne, who recorded his first bird foray in 1869. Subsequently both had long and honourable careers, the first becoming a professional (at the Australian Museum, Sydney), and Campbell remaining an amateur who virtually dominated Australian ornithology until his death in 1929. Since their time ornithology has flourished. The first societies were formed around the turn of the century — the South Australian Ornithological Association in 1899 and the Royal Australasian Ornithologists' Union (to give it its modern name) in 1901, when its journal, *The Emu*, modelled on *The Ibis*, began publication.

Most of the serious earlier ornithologists were engrossed with taxonomic studies, in the classical manner, and occupied themselves with collecting, both skins and eggs. When these activities passed into desuetude during the 1930's, owing to the increasing pressure of conservation feeling in the community at large, ornithology remained at a stage of elementary life history study hardly advanced since the Gilbert White era. Most workers were amateurs and for the most part only medical practitioners possessed any scientific knowledge. University zoologists on the whole remained aloof from ornithological investigations.

A subtle change came over the ornithological scene in the years after the Second World War. An increasing number of younger University and Museum research workers chose birds as fitting subjects for study. There was renewed attention to taxonomic investigation on modern lines, notably by Allen Keast (a pupil of Ernst Mayr) and Herbert Condon; ecological studies in the field achieved a degree of sophistication equalling overseas effort, by the establishment of a national ringing scheme, tardily begun in the early 1950's; laboratory physiological studies, to complement field work were introduced by the late A. J. ("Jock") Marshall. Marshall continued at Oxford and London and stimulated studies abroad as well as in Australia, his influence evoking a tribute by British colleagues, B. Lofts and R. K. Murton, for "his ability to relate laboratory experimentation to the natural environment". This vigorous invasion of the ornithological field by academic workers caused more than a ripple in the ornithological societies, which had remained in the control of devotees of the old school.

The Royal Australasian Ornithologists' Union, in particular, was affected by these winds of change. Its leaders were handicapped additionally by the fetters of an outworn and unwieldy system of government; the council numbered at times some 40 members scattered over the continent. Fortunately the discerning President of the day appointed a review committee to recommend reforms. It reported in 1966 and 1968, proposing drastic changes in internal control and future policy. Though unpalatable to some of the old guard the report was adopted. The reformed Union decided to concentrate "on basic aims befitting a leading ornithological society in the country" and to "follow its traditional beacon", the B.O.U., to upgrade its standards to conform with that body's alignment with the new ornithology of the present day.

The Union is now governed by a small council, a happy blend of amateur, professional and academically trained ornithologists. The achievements of ornithologists at large, in universities, museums, government departments, and laymen "in private practice", as it were, now bear comparison with those of most overseas countries. The standards reached may be gauged by the published proceedings of the XVI International Ornithological Congress held in Canberra in 1974 and the personal impressions of the visiting participants.

A vivid survey of the results of ornithological studies in Australia has been prepared for the general reader by Ian Rowley in his book, *Bird Life* (Collins Australian Naturalists Library, Sydney, 1974, a series modelled on the same publisher's British New Naturalist volumes). Here are reviewed recent studies on several Australian birds indicating the variety of research now being carried out in Australia. For instance Rowley's book describes a phenomenon peculiarly well developed in Australia, that of group living. He pays a tribute to the pioneering studies of this modification of the territory theory by the amateur, Angus Robinson, of Coolup Western Australia, in his studies of the Australian Magpie (*Gymnorhina*), and describes its varied occurence in other genera, where the advantage of groups over conventional pairs is shown to be dependent on environmental circumstances.

Among the more spectacular recent happenings in Australian ornithology was the re-discovery in December 1961, in Western Australia, of the long-lost supposedly extinct Noisy Scrub-bird *Atrichornis clamosus*. This little-known primitive Passerine, distantly allied to the lyre-bird *Menura* of the eastern states, had not been seen since 1889. The announcement of its survival, in a small isolated peninsula east of Albany, caused a flurry of excitement, which ultimately involved Royalty. A holiday settlement had been planned nearby and this, it was feared, would place the little colony in jeopardy. H.R.H. Prince Philip, Duke of Edinburgh, was in Perth the following year to open the Empire Games, and he took a keen interest in the preservation of the species. His influence proved decisive; the new town site was cancelled, the area was made a reserve, and a detailed research programme was initiated on the bird's ecology and comparative morphology. When the results are fully published it may be confidently claimed that the species will qualify as the best-known species on the Australian list. The life history was exhaustively studied in the field by Dr. Graeme Smith of the Division of Wildlife Research of the CSIRO. Included in his investigations was a study of captive individuals in an enclosure at the Wildlife Division's laboratory near Perth, where distinguished V.I.P.'s, including Sir Peter Scott, have been taken to see the birds, and where in October 1979 a fledgling had been reared from the egg. This difficult achievement with a secretive species living in a specialised and exacting habitat, offered hope, according to Dr. Smith, that it would be possible to rehabilitate the species by relocating birds in other suitable places in the wild — including islands. Not only in Australia were significant finds forthcoming concerning *Atrichornis*. In 1973 Mr. Ederic Slater of the CSIRO. when searching old documents at the British Museum (Natural History) at South Kensington, unearthed hitherto unknown reports by John Gilbert (Gould's "man in Western Australia"), reporting occurrences of the species in 1843. It is now becoming clear how greatly the range of the species has become fragmented following the start of European settlement in 1829, since when it has become restricted to a colony of only some 70 breeding pairs, which fortunately is flourishing and may even be extending. This reduction in range appears to have been a continuing process since earlier times, since it is believed that the birds which the Dutch navigator Willem Vlaming in 1697 recorded as Nightingales *Luscinia megarhyncos*, from their song, on the Swan River, near where the city of Perth now stands, were most likely Noisy Scrub-birds. To European ears the loud penetrating song of the Noisy Scrub-bird is amazingly similar to that of the Nightingale.

Atrichornis is not the only exciting re-discovery. Several species which had eluded searchers for many years past have come to light during the past couple of decades. The Eyrean Grass-Wren *Amytornis goyderi* of the South Australian arid interior has been found again. The Black Grass-Wren *A. housei* of the Kimberleys, which had not been re-located since its original discovery in 1901, was found again by Major Brian McDonald Booth, leader of the 5th Harold Hall Expedition of the British Museum, in 1968, and subsequently was found to be quite plentiful — once its appropriate habitat was recognised. The latest re-discovery was of the long-lost Night Parrot *Pezoporus occidentalis*. In 1979 Mr. Shane Parker, formerly of the British Museum and now of the South Australian Museum, saw a Night Parrot when he was on camel back on safari in the interior. When he alighted he was unable to pick up the bird, but he is confident it was a Night Parrot, which has not certainly been identified this century. Other than the three island forms of the Emu *Dromaius novaehollandiae*, which were exterminated very early after European settlement, no Australian bird can now be unequivocably claimed to be extinct. The mainland Emu remains so abundant in various parts as to be considered locally, as in Western Australia, a potential pest species.

In taxonomy most new forms were described long ago, particularly during the Gregory Mathews era (his new names figure prominently in the *Bulletin* during the 1920's and 1930's). However, localised new species still continue to be found, the latest being the Hall Babbler *Pomatostomus halli* described in 1964. Recent proposals by some ornithologists have lumped well-known species into smaller groupings and conversely have elevated some subspecies into full species. The latest such "new" species was a White-tailed Black Cockatoo — Carnaby's Black Cockatoo *Calyptorhynchus latriostris* — following a revision by Dr. Denis Saunders.

The R.A.O.U. itself now functions like a lusty, re-invigorated giant. It has been successful in raising relatively enormous funds, unheard of in past times; it has acquired real estate, which will, it is hoped become the nucleus of a future institute of Australian ornithology; it has set in being an Atlas Scheme which has captured the imagination of multitudes of amateur observers, and engaged in other forms of co-operative effort, enrolling the many informed amateurs. In fact co-operative programmes seem to be absorbing the energies of most amateurs to the detriment of their engagement in individual projects in which amateurs can often out-perform the professional. Professionals and academics are usually restricted to projects controlled by more or less rigid time schedules. However the pendulum is likely to swing.

The history of Australian ornithology to 1850, and a full bibliographic record to 1950, has been lucidly written by Major H. M. Whittell in his *The Literature of Australian Birds* (Perth, 1954). A series of papers by myself outlining aspects of the development of Australian ornithology, have appeared in the *Emu:* 37 (1937): 14-18; 72 (1972): 41-50; 73 (1973): 206-209, and in the *Journal of the Royal Society of Western Australia*, 62 (1979): 33–43. Stephen Marchant, editor of the *Emu*, has published a critical history of that journal and an appraisal of its contributors and their contributions in the *Emu:* 72, (1972): 51-69.

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New Zealand Ornithology during the past 50 years

by John A. Gibb

New Zealand's unique geological history still shows in our avifauna and hence in New Zealand ornithology. Though separated from the rest of Gondwanaland some 200 million years ago, these islands possess archaic survivors from the distant past – by virtue of long and remote isolation. These may be seen in our forests, likened to those of the Mesozoic and visited by northern biologists as on a pilgrimage (Fleming 1977): in the tuatara (*Sphenodon*), native frogs (*Leiopelma*), and birds, e.g. the kiwis (*Apteryx* spp.), and in one of the two native bats (*Mystacina*), sole member of an endemic family. The New Zealand region spans the Southern Ocean from the Kermadecs at 29.5°S to Macquarie I. at 55°S; it displays penguins with parrots, and over 50 species of the Procellariidae, with fewer than half this number of native passerines. Thus we are concerned for the survival of a small number of land birds, many of them endemic, and a great array of sea birds, through times of drastic environmental change.

The isolation that excluded other mammals from New Zealand also excluded man until Polynesians arrived only about 1000 years ago. The Maori burned some forest from drier parts of the country, ate some birds, and contributed to the demise of the moas before the first whalers sailed New Zealand waters in the late 18th century. In less than 200 years of European occupation New Zealand has lost 11½ million hectares of forest and in the process, 5 species and 5 subspecies of birds have become extinct (Williams 1962). During the past 50 years the extinction of the Laughing Owl *Sceloglaux albifacies*, Huia *Heteralocha acutirostris* and probably of the New Zealand Thrush *Turnagra capensis* has been confirmed beyond reasonable doubt. Many others have either remained very rare or have become much rarer: *Apteryx oweni, Anas aucklandica, Notornis mantelli, Himantopus novaezealandiae, Strigops habroptilus, Cyanoramphus malherbi, Xenicus longipes, Petroica traversi, Philesturnus carunculatus, Callaeas cinerea* and *Notiomystis cincta*.

The wholesale clearance of lowland forest has been the most serious cause of these reductions. Introduced ungulates and the Australian marsupial *Trichosurus vulpecula* have also thinned the remaining forest and reduced its crops of fruit; while feral cats, mustelids and rodents have all been powerful predators on native birds lacking natural defences against them.

A few small off-shore and outlying islands remain precariously inviolate, the last refuge of some vulnerable species. Biologists are fighting a rearguard action to keep these islands free of the offending mammals, and even to remove such predators from others already infested. The riddance of cats from Cuvier I., for example, has enabled the Wildlife Service to re-establish saddlebacks (*Philesturnus*) there. The brave transfer of the world population (5♂♂, 2♀♀) of Black Robins *Petroica traversi* from Little Mangere to nearby Mangere I. in the Chathams, both free of mammals, was justified by the shrinking patch of coastal forest where the survivors were cornered.

Faced with continuing demands for the little remaining lowland forest on the mainland, conservationists confront sawmillers with requests to set up a network of reserves. Some of the principles of island biogeography, lately extended to continental 'island' habitats, are being applied to the design of these biological reserves (Diamond 1975), but not even a generous spread of reserves can stop all further extinctions, as the existing avifauna is still adjusting to the present restricted distribution of suitable habitats.

Petrels and shearwaters used to breed on mountain ranges far inland, but most no longer do so – presumably because of predation by mustelids, cats and rats. Their plight is less desperate than that of the land birds because they also breed on islands and their food supply is not yet endangered – so far we have not experienced severe oil spills in New Zealand waters.

The past 50 years have seen a steady accumulation of knowledge about New Zealand sea birds. Richdale's (1957) study of *Megadyptes antipodes* remains a classic. Current studies of *Diomedia epomophora* at Taiaroa Head, near Dunedin, and on subantarctic Campbell I., and of *Sula bassana* at Cape Kidnappers in the North Island, are revealing the demography of these long-lived birds. Other breeding studies, together with systematic surveys of the islands and well-organised beach patrols for stranded corpses (a New Zealand specialty), are rewarding. Highlights include the finding of the breeding place of *Puffinus huttoni* 1000 m above sea level in the Seaward Kaikoura Range in 1965, and the recent discovery of *Pterodroma magentae*, probably breeding in the Chathams. Following Dr Orbell's rediscovery of *Notornis* in 1948, such events have enlivened the otherwise rather sombre ornithological scene.

Colonisation of New Zealand, principally from Australia, has accelerated in historical times. The present phase began with the take-over by *Zosterops lateralis* in the mid 19th century: they now occupy all but the bleakest of habitats and could claim to be our commonest species. The following 10 species have become established breeders in the last 50 years: *Platalea leucorodia,* since about 1950, though it has not bred for the last 2 years; *Ardea novaehollandiae* since about 1940, now common; *Fulica atra,* first confirmed in 1958, now widespread but local; *Lobibyx novaehollandiae,* breeding since 1947 and still spreading; *Charadrius melanops,* since 1954 and still spreading; *Cacatua galerita,* probably an escape, now established locally; *Platycercus eximius,* an escape firmly established in several districts; *Dacelo gigas*, introduced Kawau I., off Auckland, 1860–80, now also on the adjacent mainland; *Pycnonotus cafer*, an escape now exterminated; *Hirundo tahitica,* first bred in 1958, now widespread and common. During this same period, wader enthusiasts have added nearly 20 new Arctic species to the New Zealand list.

Some 34 species were deliberately introduced and spread by man. Though none has won such popular affection as the darling natives, the countryside would seem empty without them; on the other hand, farmers would be deprived of several species commonly regarded as pests (e.g. House Sparrow, Starling, Indian Myna, Rook). The only recent introduction, of *Perdix perdix* in the early 1960s, seems to have failed.

The second (1955) edition of Oliver's *New Zealand Birds* stood for 11 years before Falla, Sibson & Turbott wrote the first field guide in the Peterson tradition. The same authors have now produced a much improved 'New Guide' (1979), which appeared, sadly, just after Sir Robert Falla's death. Kinsky's (1970) 'Annotated Checklist' is also being revised. These volumes, with Turbott's (1967) *Buller's Birds of New Zealand*, form the nucleus of every New Zealand ornithologist's library.

The Royal Forest and Bird Protection Society boasts much the largest membership among our natural history societies, and is politically active in the cause of conservation. The Ornithological Society of New Zealand organises regional as well as national meetings, publishes *Notornis* quarterly, runs the nest record scheme, and promotes various enquiries; it steers clear of politics. The Society initiated the bird-banding scheme now run by the Wildlife Service. A highly ambitious achievement has been the production of a provisional atlas of bird distribution (Bull *et al.* 1978), which did well to cover 85% of the 3675 10,000-yard map squares comprising New Zealand. A definitive atlas with even better coverage may be produced in about 1980.

Fifty years ago almost all ornithological publications came either from the museums or from amateurs. New Zealand has shared the strong post-war swing towards professionalism that has grown up alongside amateur ornithology. Ornithologists now find employment (if they are lucky) in the Wildlife Service, the museums, DSIR Ecology Division, or in the universities.

Notable research has been done on the moas and other extinct and flightless birds (e.g. Archey 1941, Oliver 1949); on the age and origins of the biota (Fleming 1975); on the distribution and status of native land birds and their adaptation to a changing environment, and on the biology of sea birds here and in Antarctica, by numerous New Zealand ornithologists. Modern single-species studies, research on the development of dialects in *Philesturnus* (P. Jenkins unpubl.), and on the species diversity of island habitats, reinforce the prospect that New Zealanders will keep up with the frontiers of ornithology. There will be more extinctions and more additions to the avifauna. Study of their evolutionary implications may be as important a contribution to knowledge in the next 50 years as it has been in the past.

Acknowledgements: I am grateful to Drs. Peter Bull and John Flux for advice in writing this short review.

References:

Archey, G. 1941. The Moa – a study of the Dinornithiformes. *Bull. Auck. Inst. Mus.* 1: 1–145.

Bull, P. C., Gaze, P. D. & Robertson, C. J. R. 1978. *Bird Distribution in New Zealand: a provisional atlas 1969-1976.* Ornith. Society N.Z. Inc. Wellington.

Diamond, J. M. 1975. The island dilemma: lessons of modern geographic studies for the design of natural reserves. *Biol. Conservation* 7: 129–46.

Falla, R. A., Sibson, R. B. & Turbott, E. G. 1979. *The New Field Guide to the Birds of New Zealand.* Collins: Auckland and London.

Fleming, C. A. 1975. The geological history of New Zealand and its biota. In *Biogeography and Ecology in New Zealand,* Ed. G. Kuschel. Junk: The Hague.

Fleming, C. A. 1977. The history of life in New Zealand forests. *N.Z. Jl. For.* 22: 249–62.

Kinsky, F. C. 1970. *Annotated Checklist of the Birds of New Zealand,* including the Birds of the Ross Dependency. A. H. and A. W. Reed: Wellington.

Oliver, W. R. B. 1949. The moas of New Zealand and Australia. *Dominion Mus. Bull.* 15: 1–204.
Oliver, W. R. B. 1955. *New Zealand Birds*. A. H. and A. W. Reed: Wellington.
Richdale, L. E. 1957. *A Population Study of Penguins*. Oxford University Press.
Turbott, E. G. 1967. *Buller's Birds of New Zealand*. Whitcombe and Tombs: Christchurch, N.Z.
Williams, G. R. 1962. Extinction and the land- and freshwater-inhabiting birds of New Zealand. *Notornis* 10: 15–32.

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Recent trends in sub-Antarctic ornithology

by John Warham

In this review the sub-Antarctic is considered to be the region of the Southern Ocean between the sub-Tropical and Antarctic Convergences (Figure 1). Various island groups within this zone provide important breeding sites for large numbers of seabirds. Smaller numbers of landbirds are also resident, some of endemic status.

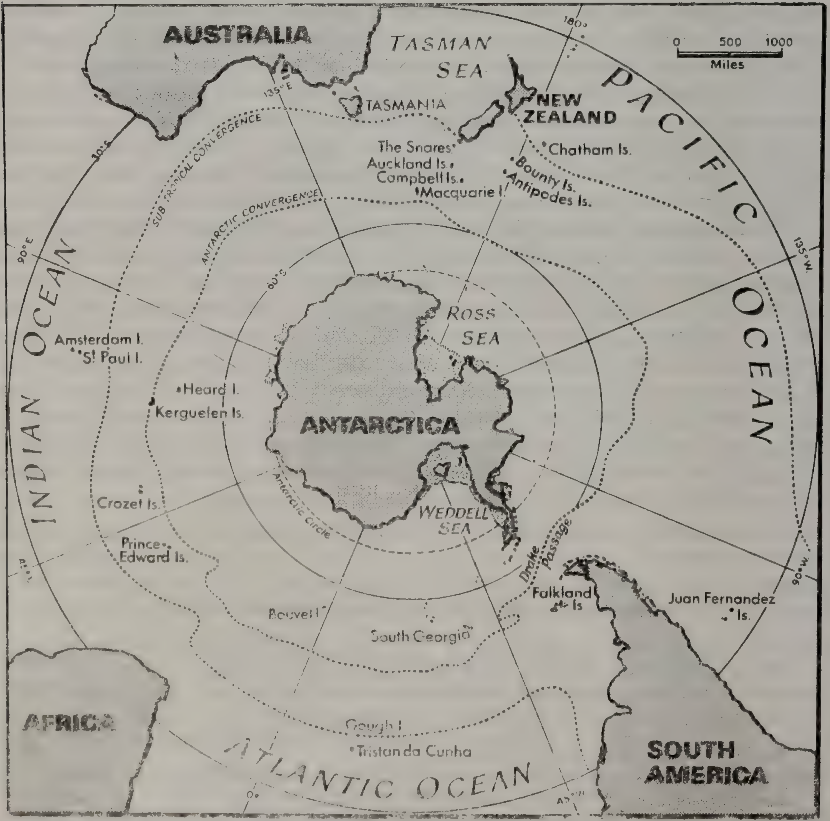
AUSTRALIA
TASMAN SEA
180°
0 500 1000
Miles
PACIFIC OCEAN
135°E
TASMANIA
NEW ZEALAND
SUB TROPICAL CONVERGENCE
The Snares
Auckland Is.
Campbell Is.
Macquarie I.
Chatham Is.
Bounty Is.
Antipodes Is.
ANTARCTIC CONVERGENCE
90°E
135°W
60°S
ROSS SEA
INDIAN OCEAN
Amsterdam I.
St Paul I.
Heard I.
Kerguelen Is.
ANTARCTICA
Crozet Is.
Prince Edward Is.
Antarctic Circle
WEDDELL SEA
Drake Passage
Falkland Is
Juan Fernandez Is.
90°W
Bouvet I
South Georgia
AFRICA
Gough I
Tristan da Cunha
ATLANTIC OCEAN
SOUTH AMERICA
0°

Fig. 1. The Southern Ocean showing mean positions of Sub-Tropical and Antarctic Convergences.

Up to World War II, sub-Antarctic ornithologists were mainly concerned with the numbers and distribution of species and with the collection of specimens. These activities have continued up to the present time and we are still counting, mapping, preparing inventories and unravelling the main strands of life histories. Little experimental work has been attempted, less indeed than in the Antarctic, for, paradoxically, the latter region is more accessible than are most islands of the sub-Antarctic zone. Much of the work on birds has been directly or indirectly supported by interested governments and this seems likely to continue following declarations of exclusive economic zones (E.E.Z.). New Zealand, for example, has declared an E.E.Z. embracing all her southern islands – the fifth largest zone in the world.

The birds of these southern islands have evolved in the absence of placental mammals and are very vulnerable to alien introductions. Only recently have efforts been made to collect firm data on these effects. At Kerguelen, Lesel & Derenne (1975) and at Macquarie Island, Jones (1977) examined cat predation and Challies (1975) at Auckland Island that of feral pigs. From analyses of stomachs and faeces Jones estimated that Macquarie's 375 cats eat 47,000 of the prion *Pachyptila desolata* and 11,000 White-headed Petrels *Pterodroma lessoni* annually.

The French have made a major contribution to sub-Antarctic ornithology. They have continued the descriptive work but have also done some physiological and experimental studies such as those on thermo-regulation in penguins. Mougin (1972, 1974), for instance, found that while deep body temperatures are very constant, foot and flipper temperatures vary in accordance with their role as heat radiators, and that fairly high internal temperatures (39.1°C) are powered by burning fat reserves which, in the King Penguin *Aptenodytes patagonica* involves a loss of 1.7% of body weight per day, and an even greater loss in smaller species.

French studies of seabirds are notable for the emphasis placed on macro- and micro-climates of colony- and nest-sites. Many population estimates and distribution maps have been produced, not only for colonial species but for territorial ones like Southern Skuas *Catharacta skua lonnbergi*. Nesting success has been determined by recording losses at various stages of the breeding cycles and data collected on the attainment of homeothermy by chicks. Some syntheses have also been presented, notably on the ecology of the Procellariidae by Mougin (1975) and by Barrat & Mougin (1974) on the zoogeography of Southern Ocean seabirds. Little has been done on behaviour but Jouventin (1978) examined the comparative ethology of penguins, his work complementing that of Warham (1975) and of Smith (1974), who made an ethological analysis of the Royal Penguin *Eudyptes chrysolophus schlegeli*.

The large Kerguelen Archipelago has been inhabited since 1950, but reports on the birds have been few since the early accounts of Milon & Jouanin (1953) and the very comprehensive study of Paulian (1953), then the most detailed for any sub-Antarctic island. These have been brought up to date by Derenne *et al.* (1974). Perhaps their most interesting finding is the inter-breeding of the Kerguelen Shag *Phalacrocorax verrucosus* and the King Shag *P. albiventer*, indicating that these should be regarded as conspecifics.

In warmer seas the avifaunas of the islands of St. Paul and New Amsterdam were virtually unknown until Segonzac's paper (1972). He found small numbers of Yellow-nosed Mollymawks *Diomedea chlororhynchos* breeding on

St. Paul whereas the Amsterdam Island's 15,000 pairs is evidently the largest known of this species. Segonzac also confirmed the nesting at St. Paul of the Fleshy-footed Shearwater *Puffinus carneipes*, whose timetable appears to be similar to that of the Western Australian population.

In recent years the main thrust of the French sub-Antarctic research in our field has been in the Crozet Archipelago. The birds of Ile des Cochons, Ile de l'Est and Ile de la Possession have been described. Some smaller islands have still to be examined. This group is very important for seabirds, supporting populations of Rockhopper and Macaroni Penguins *E. chrysocome* and *E. c. chrysolophus* of around 940,000 pairs (Derenne *et al.* 1976). Albatrosses also flourish there with some 7000 *Diomedea exulans* breeding on Ile des Cochons alone (Mougin 1970a). Among other petrels there are large populations of prions *Pachyptila* spp. and other burrowers. Sheathbills *Chionis major* also occur, as do also small numbers of the relict duck *Anas eatoni*.

Mougin's (1970b) work on the sibling sooty albatrosses *Phoebetria fusca* and *P. palpebrata* which nest sympatrically on Possession Island, established that they occupied distinct colonies without inter-breeding and with *fusca* laying about 14 days earlier than *palpebrata*. He also undertook an ecological study of the Kerguelen Petrel *Pterodroma brevirostris* which threw light on what had been one of the world's least known seabirds (Mougin 1969). Data on the Crozet Island King Penguins add to Stonehouse's earlier long-term study at South Georgia. Barrat (1976) found that the Crozet Island chicks have the same winter decline in weight but that successful pairs may possibly breed every 2 years instead of every 3 as at South Georgia. Southern Skua studies by Barre (1976) provide new data on measurements and breeding ecology of this familiar but rather neglected bird. Derenne *et. al.* (1976) also mapped the King Shag colonies around all 3 of the larger islands. Their paper gives new data on body weights and other measurements, on the climatic conditions at the colony sites and on the annual cycles.

The British effort in Southern Ocean ornithology has been concentrated mainly at Signy Island and South Georgia, both in the Antarctic Zone and hence beyond the scope of this review. Further north, at Gough Island and Tristan da Cunha rather little research has appeared since the base-line papers of Elliott (1957) and of Swales (1965). The interesting endemics – flightless moorhen, rail and the finches – have evidently not been studied in detail in the field although *Gallinula nesiotis* has been widely bred in captivity. The giant petrels of Gough Island are not numerous. They are presumably *M. halli* but good descriptions of their plumage and soft parts are badly needed. The same is true of those from the Falkland Islands.

The Falkland's birds include some endemics, e.g. the Flightless Steamer Duck *Tachyeres brachypterus*, and many endemic sub-species, but little detailed work has been published since Cawkell & Hamilton's annotated list (1961). Much ringing of Black-browed Mollymawks *D. melanophrys* has been done in this group and many recoveries made. The handbook by Woods (1975) provides a useful summary of present knowledge. Some changes have been recorded, e.g. the establishment of Sooty and Greater Shearwaters *Puffinus griseus* and *P. gravis* and Macaroni Penguins as breeders. The fate of these latter krill-eaters will be interesting following the decline in whale stocks and the development of a krill-harvesting industry. From the one brief description, the 400-acre Beauchene Island, well to the south of the main group, appears to be a major seabird sanctuary (Strange 1965).

Macquarie Island, politically part of Tasmania, has been occupied continually since 1948. Initially bird studies mostly involved the ringing of albatrosses and giant petrels. More detailed work started in the 1960's, including the major long-term study of a sub-Antarctic bird, the Royal Penguin, 19,097 of which were flipper-banded. Carrick (1972) followed the life histories of individual birds and found, *inter alia*, that the minimum weight of a newly arrived male had to be 4.6 kg for it to hold a nest, while for a female to lay she had to scale 4.8 kg on arrival, the weight of the fledgling being significantly related to that of its female parent on landing. Carrick placed great emphasis on social status as a factor in the regulation of the population.

Other birds investigated at this island include the White-headed Petrel and the giant petrels (Warham 1967, 1962). The discovery that *Macronectes* consists of 2 sibling species, *giganteus* of the maritime Antarctic and *halli* of the sub-Antarctic, arose from the latter work. Both species breed in different places at different times at Macquarie Island (Bourne & Warham 1966). Subsequent Australian, French and South African investigations have confirmed these findings and at Crozet (Voisin 1976) and Marion Island (Zinderen Bakker 1971a) and even at South Georgia both also breed sympatrically. A long-term study of the biennial breeding albatross *Phoebetria palpebrata* by E. Kerry is in preparation. Other specialised papers include Shaughnessy's (1975, 1970) work on the phenotypes of the Royal Penguin and of the genetics of the Southern Giant Petrel, but no up-to-date account of the Macquarie Island birds as a whole has appeared and in recent years ornithological research there has been reduced.

New Zealand has care of many sub-Antarctic islands but only the Chathams are inhabited. Most post-war research arose from privately-financed and university expeditions such as the Denver Museum's to Campbell Island (Bailey & Sorensen 1962) and a series organised from the University of Canterbury to the Snares (1961–1977) and to Antipodes Island in 1969. Recently government departments have organised comprehensive summertime visits to the Auckland Islands (1972–73) and to the Bounties and Antipodes Island (1978) with many to the Chatham Islands. A notable effort has been D. Crockett's privately-financed searches for the Chatham Island Taiko, probably *Pterodroma magentae*. He rediscovered the bird in 1978 and more specimens were seen and handled, without nests being discovered, in 1979.

From the Snares Islands data on nest site and mate tenacity in Buller's Mollymawk *D. bulleri* have been presented by Richard & Warham (1973). Some of the birds have bred for at least 29 years. General studies of seabirds on the Snares include work on the Mottled Petrel *Pterodroma inexpectata* (Warham *et al.* 1977), on the Cape Petrel *Daption capense* (Sagar 1979) and on the Antarctic Tern *Sterna vittata* (Sagar 1978). The breeding biology of the Snares Penguin *Eudyptes robustus* was studied over several years by Warham (1974) and, together with similar work on other eudyptids, *E. c. schlegeli*, *E. chrysocome* and *E. sclateri* elsewhere in the sub-Antarctic (Warham 1971, 1963, 1972b), provide a useful basis for further work. The most widespread of these crested penguins, the Rockhopper, breeds between 36° and 53°S and the laying dates correlate well with annual sea temperature, those at Tristan da Cunha and Gough Island (15°C) laying about 10 weeks earlier than those at Kerguelen (2.5°C) (Warham 1972a). Warham (1975) has also summarised the Crested Penguin work and described some vocalisations.

A major discovery of the 1972–73 Auckland Islands Expedition was an estimated 7000 pairs of Wandering Albatrosses breeding there annually, making this the major breeding concentration with some 37% of the world population (Robertson 1975). These birds are also abundant at Antipodes Island with perhaps 900 breeding pairs each year (Warham & Bell, 1979), but these and the few at Campbell Island have much darker breeding plumage than those elsewhere. These, and the Auckland Island birds are also smaller than those of high-latitudes, but the Auckland Wanderers are not dark plumaged, so that even within the New Zealand region there appear to be several distinct populations.

Research from this part of the sub-Antarctic includes some specialised studies like that of Imber & Russ (1975) on the foods of albatrosses based on the identifications of squid beaks and the comparative ecological work of Taylor (1975 and in prep.) on the parrots *Cyanorhamphus unicolor* and *C. novaeseelandiae* breeding at Antipodes Island where both appear to thrive despite the very restricted resources of a mere 2000 ha. Other recent work has been on the Auckland Island Teal *Anas aucklandica* (Weller 1975) who has also written (1972) accounts of some wildfowl from the Falklands.

A major finding of the South Africans in the sub-Antarctic was the existence of a substantial number of Yellow-nosed Mollymawks at Prince Edward Island (Zinderen Bakker 1971b). Among other published work from Marion and Prince Edward Islands is a study of the body composition and energy metabolism of moulting crested penguins by Williams *et al.* (1977) and a survey of behaviour in the Gentoo Penguin *Pygoscelis papua* (Zinderen Bakker 1971c).

Continuing programmes will no doubt increase the accuracy of species lists and throw up surprises like the Soft-plumaged Petrels *Pterodroma mollis* at Antipodes Island (Warham & Bell 1979) and the discovery of breeding South Georgian Diving Petrels *Pelecanoides georgicus* on Codfish Island near Stewart Island (Imber, pers. comm.). The prognosis for further research in the sub-Antarctic seems good, partly because of the need to police economic zones, so that more transport may be available. Hopefully there will be attempts to find out more about seabirds at sea, for although many transects have been published, these are difficult to evaluate and standardisation of methods seems essential. Recent examples are those of Johnstone (1974) and Johnstone & Kerry (1976) whose findings included that the 2 sibling giant petrels do tend to segregate in summer as predicted by Bourne & Warham (1966), *giganteus* being commonest south of the Antarctic Convergence, *halli* to the north, but non-breeders of both species shift north in the winter.

References:

Bailey, A. M. & Sorensen, J. H. 1962. Subantarctic Campbell Island. *Denver Mus. Nat. Hist. Proc.* No. 10.

Barrat, A. 1976. Quelques aspects de la biologie et de l'écologie du Manchot Royal (*Aptenodytes patagonicus*) des Iles Crozet. *C.N.F.R.A.* 40: 9–52.

Barrat, A. & Mougin, J. L. 1974. Données numériques sur la zoogéographie de l'avifaune antarctique et subantarctique. *C.N.F.R.A.* 33: 1–24.

Barre, H. 1976. Le Skua subantarctique *Stercorarius skua lonnbergi* (Mathews) à l'Ile de la Possession (Iles Crozet). *C.N.F.R.A.* 40: 77–105.

Bourne, W. R. P. & Warham, J. 1966. Geographical variation in the giant petrels of the genus *Macronectes*. *Ardea* 54: 45–67.

Carrick, R. 1972. Population ecology of the Australian Black-backed Magpie, Royal Penguin and Silver Gull. pp. 41–99 in *Population Ecology of Migratory Birds*. U.S. Fish and Wildl. Service, Wildlife Rep. 2. Washington.

Cawkell, E. M. & Hamilton, J. E. 1961. The birds of the Falkland Islands. *Ibis* 103a: 1–27.

Challies, C. N. 1975. Feral pigs (*Sus scrofa*) on Auckland Island: status, and effects on vegetation and nesting sea birds. *N.Z. J. Zool.* 2: 479–490.

Derenne, P., Lufbery, J. X., & Tollu, B. 1974. L'avifaune de l'Archipel Kerguelen. *C.N.F.R.A.* 40: 107–148.

Elliott, H. F. I. 1957. A contribution to the ornithology of the Tristan da Cunha group. *Ibis* 99: 545–586.

Imber, M. J. & Russ, R. 1975. Some foods of the Wandering Albatross (*Diomedea exulans*). *Notornis* 22: 27–36.

Jones, E. 1977. Ecology of the Feral Cat, *Felis catus* (L.), (Carnivora: Felidae) on Macquarie Island. *Aust. Wildl. Res.* 4: 249–262.

Johnstone, G. W. 1974. Field characters and behaviour at sea of giant petrels in relation to their oceanic distribution. *Emu* 74: 209–218.

Johnstone, G. W. & Kerry, K. R. 1976. Ornithological observations in the Australian sector of the Southern Ocean. pp. 725–738 in *Proc. 16th. Inter. Ornithol. Congr.* Canberra.

Jouventin, P. 1978. *Ethologie comparee des Spheniscides*. Doctorate thesis, Univ. Sciences et Techniques de Languedoc.

Lesel, R. & Derenne, P. 1975. Introducing animals to Kerguelen. *Polar Rec.* 17: 485–494.

Milon, P. & Jouanin, C. 1953. Contribution à l'ornithologie de l'Ile Kerguelen. *L'Oiseaux* 23: 4–52.

Mougin, J. L. 1969. Notes écologiques sur le Pétrel de Kerguelen *Pterodroma brevirostris* de l'Ile de la Possession (Archipel Crozet). *L'Oiseaux* 39: No. Spec. 58–81.

— 1970a. Observations écologiques sur les grand albatros (*Diomedea exulans*) del 'Ile de la Possession (Archipel Crozet) en 1968. *L'Oiseaux* 40 No. Spec.: 16–36.

— 1970b. Les albatros fuligineux *Phoebetria palpebrata* et *P. fusca* de l'Ile de la Possession (Archipel Crozet). *L'Oiseaux* 40 No. Spec.: 37–61.

— 1972. Enregistrements continus de températures internes chez quelques Spheniscidae. I – Le Manchot Papou *Pygoscelis papua* de l'Ile de la Possession (Archipel Crozet). *L'Oiseaux* 42 No. Spec.: 84–110.

— 1974. Enregistrements continus de températures internes chez quelques Spheniscidae. II – Le Manchot Royal *Aptenodytes patagonica* de l'Ile de la Possession (Archipel Crozet). *C.N.F.R.A.* 33: 29–56.

— 1975. Ecologie comparée des Procellariidae Antarctiques et Subantarctiques. *C.N.F.R.A.* 36: 1–195.

Paulian, P. 1953. Pinnipèdes, Cetacés, Oiseaux des Iles Kerguelen et Amsterdam. *Mem. Inst. Sci. Madagascar.* Ser. A 8: 111–234.

Richdale, L. E. & Warham, J. 1973. Survival, pair bond retention and nest-site tenacity in Buller's Mollymawk. *Ibis* 115: 257–263.

Robertson, C. J. R. 1975. Report on the distribution, status and breeding biology of the Royal Albatross, Wandering Albatross and White-capped Mollymawk on the Auckland Islands. pp. 143–151 in *Preliminary results of the Auckland Islands Expedition 1972-73.* N.Z. Dept. Lands & Survey, Wellington.

Sagar, P. M. 1978. Breeding of Antarctic Terns at Snares Islands, New Zealand. *Notornis* 25: 59–70.

— 1979. Breeding of the Cape Pigeon (*Daption capense*) at the Snares Islands. *Notornis* 26: 23–36.

Segonzac, M. 1972. Données récentes sur la faune des Iles Saint-Paul et Nouvelle Amsterdam. *L'Oiseaux* 42 No. Spec.: 3–68.

Shaughnessy, P. D. 1970. The genetics of plumage phase dimorphism of the Southern Giant Petrel *Macronectes giganteus*. *Heredity* 25: 501–506.

— 1975. Variation in facial colour of the Royal Penguin. *Emu* 75: 147–152.

Smith, G. T. 1974. An analysis of the function of some displays of the Royal Penguin. *Emu* 74: 147–152.

Strange, I. J. 1965. Beauchêne Island. *Polar Rec.* 12: 725–730.

Swales, M. K. 1965. The sea-birds of Gough Island. *Ibis* 107: 17–42 & 215–229.

Taylor, R. H. 1975. Some ideas on speciation in New Zealand parakeets. *Notornis* 22: 110–121.

Warham, J. 1962. The biology of the Giant Petrel *Macronectes giganteus. Auk* 79: 139–160.

— 1963. The Rockhopper Penguin, *Eudyptes chrysocome,* at Macquarie Island. *Auk* 80: 229–256.

— 1967. The White-headed Petrel *Pterodroma lessoni* at Macquarie Island. *Emu* 67: 1–22.

— 1971. Aspects of the breeding behaviour of the Royal Penguin *Eudyptes chrysolophus schlegeli. Notornis* 18: 91–115.

— 1972a. Breeding seasons and sexual dimorphism in the Rockhopper Penguin. *Auk* 89: 86–105.

— 1972b. Aspects of the biology of the Erect-crested Penguin *Eudyptes sclateri. Ardea* 61: 145–184.

— 1974. The breeding biology and behaviour of the Snares Crested Penguin. *J. Roy. Soc. N.Z.* 4: 63–108.

— 1975. The Crested Penguins. pp. 189–269 in *The Biology of Penguins.* Macmillan, London.

Warham, J., Keeley, B. R. & Wilson, G. J. 1977. The breeding of the Mottled Petrel *Pterodroma inexpectata. Auk* 94: 1–17.

Warham, J. & Bell, B. D. 1979. The birds of Antipodes Island, New Zealand. *Notornis* 26: 121–169.

Weller, M. W. 1972. Ecological studies of Falkland Islands' waterfowl. *Wildfowl* 23: 25–44.

— 1975. Ecological studies of the Auckland Islands Flightless Teal. *Auk* 92: 280–297.

Williams, A. J., Siegfried, W. R., Burger, A. E. & Berruti, A. 1977. Body composition and energy metabolism of moulting eudyptid penguins. *Comp. Biochem. Physiol.* 56A: 27–30.

Woods, R. W. 1975. *The Birds of the Falkland Islands.* Anthony Nelson: Oswestry.

Voisin, J. F. 1976. Observations sur les pétrels géants de l'Ile aux Cochons (Archipel Crozet). *Alauda* 44: 411–429.

Zinderen Bakker, E. M. van, Jr. 1971a. Comparative avian ecology. pp. 161–172 in *Marion and Prince Edward Islands.* Balkema: Cape Town.

— 1971b. The genus *Diomedea.* pp. 273–282 in *Marion and Prince Edward Islands.* Balkema: Cape Town.

— 1971c. A behaviour analysis of the Gentoo Penguin (*Pygoscelis papua* Forster). pp. 251–272 in *Marion and Prince Edward Islands.* Balkema: Cape Town.

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The present status of Antarctic ornithology

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INTRODUCTION

The three essential features of the antarctic continent critical to an understanding of antarctic ornithology are its position almost exactly centred on the South Pole, with most of its land mass below latitude 70°S; its permanent cover of ice and snow with much of its periphery at sea level girdled with glaciers or fast ice; and its great isolation from other substantial land masses across notoriously desolate ocean spaces, enhanced by the circumpolar air and water circulation patterns.

Climate similarity and biogeographical links suggest that the most useful regional area for a review of Antarctica is one extending out to about the Antarctic Convergence. The Antarctic Convergence, however, falls within the circle of westerly wind patterns and related water flow, countered in a narrow band around the continent by an easterly flow. The climate of the westerly wind zones is characterized by high, steady winds, high precipitation and predominantly cloudy weather. The weather in the easterly wind zone is generally better; drier with fewer cloudy days and lighter winds, though colder. Antarctic personnel appreciate this difference. Working conditions are much easier on most continental rookeries than on the island rookeries further north — no smell, no wind, little rain, clear skies. The real heroes in this region are those who struggle through the bogs and mists of the subantarctic islands in oiled or sodden clothing, with damp and mildewed note-books; not those in the briskly cheerful rookeries of the far south.

As one moves south the diversity of species declines, from 26 breeding species on South Georgia to just three species for study, the Adélie Penguin *Pygoscelis adeliae* and McCormick's Skua *Catharacta maccormicki* over summer and the Emperor Penguin *Aptenodytes forsteri* in winter. A bibliography of papers published since 1960 contains 562 papers; 137 general accounts of the avifauna, 274 on penguins, 76 on petrels and albatrosses and 47 on skuas. Shags, gulls, sheathbills and the smaller petrels have received little attention.

There are a number of general accounts of the antarctic avifauna in addition to a voluminous specialist literature. Murphy's (1936) two-volume *Oceanic Birds of South America* has stood as the prime source of general information on the birds of the region to this day. Since then general reviews have appeared by Falla (1964) on the distribution of birds; Stonehouse (1965) on birds and mammals; Carrick & Ingham (1967, 1970) on recent and future research areas; Austin (1968) on recent American research; Stonehouse (1975) on the biology of penguins; Watson *et al.* (1971) on species distribution and taxonomy; and Watson (1975) on a comprehensive guide to the identification, distribution and biology of antarctic and subantarctic birds. The three SCAR biology meetings provided a wealth of information, and research output of French scientists appears regularly in *L'Oiseau*. Research programmes and short reports appear annually in antarctic journals.

Antarctic ornithology is pre-eminently the study of adaptations for survival and breeding in a severe environment, above all else to cold conditions: in the maintenance and regulations of body heat, in the adjustments of breeding patterns to a short, favourable season; and for winter survival away from the land.

Distribution and taxonomy of some Antarctic species

The breeding distributions of antarctic birds is now fairly well catalogued. The map folio of Watson *et al.* (1971) showing distribution of individual species is a remarkable achievement highlighting the rapid progress made in the biological exploration of the region. These distribution records have been compiled from an enormous variety of sources, ranging from a wealth of historical records, from incidental observations from ships, from the explorations of geologists and surveyors to the systematic surveys of geographic regions. A remarkable feature is the uniformity of species across such a large area. Only 4 species are subspecifically differentiated within the geographic range covered by this review. The Snow Petrel is considered to have 2 forms, a smaller subspecies *Pagodroma nivea nivea* over most of the continent and a much larger form *P. n. major* in Adélie land with the habit of nesting in more open terrain. The Blue-eyed Shag is considered to have 3 subspecies:- *Phalacrocorax atriceps gaini* on the Antarctic Peninsula and

Scotia Arc islands, *P. a. nivalis* on Heard, and *P. a. georgianus* on South Georgia. Wilson's storm petrel has one subspecies *Oceanites o. oceanicus* on Kerguelen and other northern islands, and *O. o. exasperatus* to the south. *Eudyptes chrysolophus* has 2 distinct subspecies, *E. c. chrysolophus*, the Macaroni Penguin, widespread through the region, and *E. c. shlegeli* the Royal Penguin of Macquarie.

Apart from these 4 species all others are monotypic throughout the region or are represented by a single subspecies with others resident further to the north. The status of the skuas is not yet clearly determined. If the morphology within species is so uniform, this must indicate genetic panmixia, so that differences found in biology, behaviour and ecology represent the effect of environmental moderators. There are nevertheless substantial taxonomic problems in some antarctic species groups.

GIANT PETREL (OR FULMAR)

These birds, although obviously distinct from other petrels, have long been known as a most variable taxon with an immense breeding range from the New Zealand subantarctic islands to the antarctic mainland. Bourne & Warham (1966) proposed that 2 sibling species were involved: *Macronectes halli* breeding and feeding mainly to the north of the Antarctic Convergence and *M. giganteus* to the south. Both species breed on islands close to the convergence.

The central problem of the maintenance of their specific identities is not yet solved. Although the species do have different nesting preferences and breed at different times on islands where they breed sympatrically, (at Macquarie *M. halli* lays between 11 August and 6 September and *M. giganteus* from about 27 September to 19 October (Johnstone 1979)) some interbreeding has nevertheless been observed. Different laying dates and nesting habits do not seem sufficient over a long period to prevent major hybridisation. Research could usefully be carried out on species discrimination through both morphological and behavioural features. The small differences in bill and eye colour seem negligible in comparison with the large variation in size and plumage in these dimorphic species.

SKUAS

At no point, from the very first reviews, has there been general agreement on how the various populations of skuas should be ordered. There are 4 main problem areas.

1) The relationship of the skua-jaegar group (Family Stercorariidae) to the (other) gulls.

2) Relations between the larger forms (the skuas) and the smaller, lighter forms (the jaegars) breeding solely in the northern hemisphere.

3) The relations between and status of the various 'forms' of skuas breeding in the Atlantic arctic, the subantarctic and antarctic regions. Specifically, it needs to be resolved whether these different populations are conspecific, making up a single bipolar species, whether they comprise distinct species or whether some other arrangement of specific and subspecific units is most appropriate.

4) Finally, and more trivially, there is the need to settle on acceptable common names.

It is widely accepted that there are 4 species or species groups in the Stercorariidae, comprising 3 well defined species of smaller birds (the jaegers) *Stercorarius parasiticus*, *S. pomarinus* and *S. longicaudus*, all of which are easily distinguishable on the breeding grounds but only with difficulty as juveniles or in non-breeding plumage when on their southern migrations. The fourth group consists of the (Great) skuas. These are heavy, uniformly brownish-grey birds breeding on islands and coasts of the north Atlantic and throughout the southern temperate subantarctic and antarctic zones. Their enormous geographic range, among often isolated islands and coasts, and their breeding site tenacity makes species recognition dependent on comparisons of size and plumage, breeding habits, behaviour and distributional ranges, as with other allopatric populations of superspecies. It seems extraordinary that the taxonomy should be in such disarray that skuas still appear in publications under two generic names, *Stercorarius* and *Catharacta*, with preference given to the former by European authors and to the latter by American ones. Schnell (1970) could not demonstrate differences in the skeleton of jaegers and skuas beyond those related to size. Moreover, behavioural studies by Moynihan (1959) and Andersson (1973) show a common behavioural link through all 4 with a natural grouping into 2 pairs; a smaller pair, *parasiticus* and *longicaudus* and a larger pair, *pomarinus* and *skua*.

Within the skuas themselves, the basis is Hamilton, (1934) grouping into 5 subspecies. Murphy (1936) was unable to provide a definitive classification, and concluded (p. 1012) "since I cannot decide whether the skuas represent one species or four species, I am for the present arbitrarily regarding all of them as geographic races of a single species". His species was *Catharacta skua*. Much more is known now than in Hamilton's day of their distribution, biology and migrations but not enough yet apparently for firm convictions to occur, though it has come to be generally accepted that 6 forms exist, *skua*, *maccormicki*, *lonnbergi*, *antarctica*, *hamiltoni* and *chilensis*.

Sir Robert Falla had begun to re-examine the problem and was concerned with dimorphism in plumage colour, the spasmodic occurrence of 'golden' and 'reddish-cinnamon' casts to adult plumages, and the need to establish sequences of juvenile to adult plumage changes (R. A. Falla, pers. comm.), underlining his pleading that the taxonomic viewpoint should not be overlooked in any of the research on these species (Falla 1964).

Watson (1975) concluded that there are 2 species in the antarctic: *C. maccormicki* and *C. lonnbergi*, the other forms being "probably conspecific with one or the other of the [six] antarctic skuas".

Devillers (1977) provides by far the most useful recent survey of the status and taxonomy of this group. He examined 733 specimens which, taken together with distribution records, led him to conclude that 3 species were represented in the 6 forms: that *maccormicki* and *chilensis* were specifically distinct, whereas *lonnbergi*, *skua*, *antarctica* and *hamiltoni* were each subspecies of *Catharacta skua*. This paper also provides much information on the migratory patterns of the different forms and on their recognition at sea.

Although Gain (1914) had described *lonnbergi* and *maccormicki* breeding together on the South Shetlands and Antarctic Peninsula this was not confirmed until recently (Watson *et al.* 1971). Their area of overlap has been the focus of research of a team headed by Dr. D. F. Parmalee. His study on Anvers Island (64°46′S) has shown the considerable extent of hybridization there, and from the returns of banded fledglings that not only do *maccormicki* cross the Pacific equator — which has been long known — but that they apparently also migrate into the northern Atlantic, i.e., into the breeding range of the Great Skua. (*See* also Salomonson 1976.) This may well be the most significant study to date on skua distribution and systematic relations.

Bonner (1964) described a single trio of breeding adults of *lonnbergi* defending territories, since when Young (1978) has found such trios on South East Island of the Chathams group. Guthrie-Smith (1925) had previously described this phenomenon as common in the Stewart Islands, and further enquiry shows that it is widespread throughout the New Zealand region. It has never been recorded in *maccormicki*. If, as now seems likely, cooperative breeding has a genetic basis it indicates that the New Zealand *lonnbergi* population is somewhat genetically isolated from other skuas.

SNOW PETREL

The Snow Petrel *Pagodroma nivea* is represented in most of its range by the smaller *P. nivea nivea*, and in one small area on the Adélie Land Coast by the larger form *P. n. major*. Isenmann (1970a), in an analysis comparing size measurements and breeding ecology of the 2 forms concluded that they were not specifically distinct, as merging seems to be present at Cape Hunter, and that the larger form has been selected to withstand the greater cooling effect of the Adélie Coast environment for birds nesting in the open. This seems an extraordinary phenomenon repaying more detailed study.

SHAGS

Watson (1975) grouped the various populations of southern shags into 2 species (including the Kerguelen Shag of Voisin, 1970). Not only are the King Shag *Phalacrocorax albiventer* and Blue-eyed Shag *P. atriceps* morphologically very similar, their distribution also suggests a close affinity. The former has a more circumscribed but northern distribution, and both species breed on the southern islands and straits of South America. Behn *et al.* (1955) resolved from their surveys that *P. albiventer* had spread from the Falkland Islands east and that *P. atriceps* had dispersed from the Feugian coast of Chile towards the south and west, to as far as New Zealand, as well as northwards along the Chilean coast. They found both forms were on Tierra del Fuego. They concluded nevertheless that there were 2 valid species. Devillers & Terschuren (1978) going over the same ground, recording proportions of each form and incidences of interbreeding, on the other hand consider that the 2 forms are conspecific producing a polymorphic population in their contact area. One doubts that the last word has been written on their taxonomy and distribution.

THE BIOLOGY OF ANTARCTIC SPECIES

THE ADELIE PENGUIN *Pygoscelis adeliae*

Breeding biology and behaviour

Dr. W. J. L. Sladen, who not only saw the need for markers but perfected the present safe and durable designs of flipper bands, provided a first compendium of techniques for Adélie research, in an account (1958) that has proved to be a classic study of this bird. Similar studies were later carried out by Taylor (1962), Stonehouse (1963) and Reid (1964) at the Cape Royds and Cape Hallet rookeries. The pattern set by these authors of combining data on colony population change, breeding cycle and behaviour into a coherent whole, and the need to relate behavioural observations to seasonal patterns has been an established working rule in Antarctica from the first.

The development of a population of known-age banded birds (32,748 banded by 1968 (Sladen *et al.* 1968)) at Cape Crozier has permitted much closer analysis of biology and breeding success than hitherto possible, and this recognisable and documented population has been frequently exploited. Le Resche & Sladen (1970), for example, explored how young birds returning to the breeding rookery become more and more fully integrated within the breeding population and confirmed what had been always tacitly assumed earlier (e.g. Penney 1968), that younger birds probably contributed most to the variability in breeding behaviour seen at rookeries. Dr. D. G. Ainley, in an important study of non-breeding Adélie Penguins (1975a, b) indicated that behaviour changes with age and that older non-breeders which showed immature patterns failed to pair. Later (1978), after discovering that some 13 year-olds were still not breeding even though physiologically capable of doing so, he concluded that non-breeding in males was related to their poor nutritional reserves at the time of arrival at the rookery, which acted to reduce their pre-breeding activity. Penney (1968) set new standards for detailed observation measurement and recording of the territorial and social behaviour of the Adélie, and Spurr (1975a, b) has produced a detailed account of the social and communication behaviour of Adélie adults and chicks at the Cape Bird rookery. Spurr has also provided (1975c) a valuable account of the breeding biology of his study population over 4 seasons.

The structure of the penguin colony has attracted considerable interest in its role in climate amelioration, and in nest protection from egg and chick predation by skuas e.g. Tenaza (1971) at Cape Hallet. Oelke (1975) has extended the work of Penney and of Tenaza to individual colonies within the Cape Crozier rookery, and his results after much analysis, have related sensibly to the results of other studies on disturbance and predation. It is doubtful if one can go much further with this approach.

A fertile direction of research has been to analyse the behaviours and responses of individuals, e.g. Spurr (1974) in a study of aggressiveness. These studies rely on filming and models, which the antarctic climate positively encourages, well demonstrated by Derksen (1977), whose use of 800 hours of time-lapse photography of up to 5 pairs gave 108,000 individual frames of film for analysis of incubation behaviour, complemented by temperature data from an egg model in the nest. Photography gets around one big problem in Antarctica; 24-hour daylight allows more or less continuous bird activity, defeating even the most assiduous observer in long term studies. Müller-Schwarze (1968) had previously found that Cape Hallet birds followed a circadian activity rhythm with an activity minimum about midday, which Derksen could substantiate, though Yeates (1971) was not able to demonstrate activity rhythms at Cape Royds, possibly due to temperature and light regimes being less marked at that latitude. Daily cycles have now, however, been clearly established for penguins at Cape Crozier (Müller-Schwarze & Müller-Schwarze 1971) and Cape Bird (Spurr 1978) at a similar latitude to Cape Royds.

Feeding

Emison (1968) made the first detailed study of the feeding preferences of Adélie Penguins in the Ross Sea, without slaughtering birds, by the use of a suction tube to remove samples of food from the stomach, and showed in detail that Adélies in this area in summer were taking small shoaling organisms over 15 mm in length in the upper water layers. Ainley & Emison (1972) have attempted with some success to relate food size preference to the sexual size dimorphism of this penguin. The feeding range from rookeries still needs determination, as well as the winter diet and preferences and diets in other latitudes when competing with other penguins. The uncanny ability of the sea- and ice-bound penguins to find their feeding stations and their breeding rookeries and nests each new year has excited admiration (even wonder) in all observers. Emlen & Penney (1966) have demonstrated an acute distance navigation ability. Like the phenomenon of diurnal periodicity, this facility requires rather refined experimentation for complete analysis.

Predation

For various reasons penguins aggregate at a small number of geographic places, forming dense colonies of breeding birds. They are not only in intense competition, but also form oases of food on land for predatory and scavenging species; in the south skuas and the Leopard Seal *Hydrurga leptonyx*, and further north in addition the giant petrels *Macronectes* and the Sheathbill *Chionis minor*.

Young (1963, 1970) showed that, contrary to belief (see Maher 1966) only a small proportion of skuas breeding on Cape Royds and Cape Barne had access to the eggs and chicks of the small Cape Royds rookery; that most were independent of penguins for successful breeding, feeding entirely at sea, plunging for surface fish; and that skuas could probably not in fact be fed throughout the season at any rookery, penguins as food becoming unavailable at the time when skua chicks were placing heaviest demands on parents. These conclusions have been amply confirmed during 5 season's observational and experimental work at the much larger Cape Bird rookeries of Ross Island (Young, in prep.) Since then, Furness (1978) has provided a bioenergetic model, employing the feeding ecology and energetics of the Great Skua in Shetland, which sets high standards for antarctic work to emulate. Trillmich (1978) has re-examined the relationship between the two birds at Cape Hallet, and concluded that sufficient penguin food was available through summer at the rookery to feed at least some pairs of skuas entirely, just what proportion is uncertain. Parmalee *et al.* (1978), on the other hand, found that on Anvers Island, *lonnbergi* skuas were dependent on penguins but that *maccormicki* fed at sea and in bad ice years were not able to breed successfully. Spellerberg (1975) has reviewed the relationship between different penguins and their possible predators (Leopard Seal, Sea Lion, Killer Whale, Skua and Sheathbill), and draws a clear distinction between gross food abundance (biomass of eggs and chicks on the rookery) and food actually available to the predator.

Adaptions to cold climates

Life in the antarctic environment requires a complex thermoregulatory apparatus. Penguins in particular require effective insulation for heat retention at very low temperatures that can also allow radiation during periods of intense activity or during hot sunny days on the rookery. It is provided by a stocky body insulated both with subcutaneous fat and a dense plumage, coupled with radiating surfaces on the inner face of the flippers. The exposed lower leg and feet and air passages have subtle and sensitive temperature control systems. Stonehouse (1967, 1970) was very early to consider biology and morphology in relation to the temperature environment of penguin species.

Adaptation has been shown in seasonal breeding cycles, and in migrations to breeding areas. Distribution of breeding colonies in relation to geographic and climate-related factors, such as availability of snow-free ground and access to open water (Stonehouse 1963, Ainley & Le Resche 1973) is also adaptive. Open water access is critically important in first movement to the rookery and when feeding chicks. Yeates (1975) has summarised much of the present information on micro-climate, climate and breeding in the Adélie, and Spurr (1975d) has demonstrated a very precise orientation by Adélies to face into strong winds. Sladen *et al.* (1968) describe the impact of very severe winds, above 200 km/hr. Below these levels, winds were advantageous for breeding at Cape Crozier by providing clear water for feeding. Emperor and King Penguin adults, and chicks of most species, group together in huddles or creches at certain times. There is not much doubt that this is to preserve heat in the winter breeding penguins, but its causative agent in Adélie and other chicks is not established. Creching may occur in cold weather, and certainly occurs in rookeries disturbed by skuas or man. The need now is to measure the triggering levels against chick age and colony size, as can now be done in the laboratory following the successful transplanting of Adélie Penguin colonies described by Todd (1978). There is now a voluminous research record of the anatomical and physiological basis of fasting and temperature regulation in these birds, too large to be essayed in the present review.

SKUAS

Eklund (1961) gave the first working account of the general biology of *Catharacta maccormicki* based on a major banding programme, complementing that of Stonehouse (1956) of the feeding and breeding biology of *C. lonnbergi* at South Georgia. These two publications together with Moynihan's (1962) work on *chilensis* provided a good framework for later research and analysis.

Young's 1959/60 study (1963a, b) at Cape Royds, continued from 1964 at Cape Bird, highlighted again the vulnerability of skuas to disturbance by man and pinpointed the major cause of their low breeding success as failure to sustain the 2 chicks after hatching — a biological paradox that has subsequently received detailed study. At about the same time Le Morvan, Mougin & Prévost (1967) were working to produce an account of the ecology at Pointe Géologie (Adélie Coast), and Reid similarly was working at Cape Hallet.

At Cape Royds Spellerberg (1971a, b) provided a 4-year account of a population existing independently of penguins. The specific problem of the early loss of one of the 2 chicks hatching at skua nests has been unravelled further by Procter (1975) who concluded that "the nutritional condition of the chicks regulates aggresive behaviour"; but he was not able to place this anachronisticly intense sibling rivalry into an ecological or evolutionary context. Parmalee *et al.* (1978) found that in years with easy feeding access to the sea *maccormicki* at Anvers Island raised 2 chicks; in bad years none. Young (1972) drew attention to the remarkable stability of skua territories. Wood's (1971) is the first paper from Cape Crozier, where an intensive banding and recovery programme is to be maintained. Compared with other skua forms, there is no doubt that *maccormicki* is in an unusually stark environment.

Burton (1968a, b) has provided the most comprehensive account of the biology of skuas in the subantarctic, on *lonnbergi* at Signy Island, including details of postures and sequences of behaviour used in agonistic encounters. Notes on the biology of these species from more temperate habitats are in Downes *et al.* (1959) for Heard Island and Swales (1965) for Gough Island. Tickell (1962) comments on *lonnbergi* as a predator of petrels at several islands. A comparative study of skuas in Antarctica and on the temperate, densely vegetated Chatham Islands was pursued by Young (1978), who found that a high proportion of pairs on Chathams raised both chicks of the pair, the chicks not displaying sibling rivalry at the nest. Study of this population is being continued to provide an explanation for the common occurrence of 3 adult birds at nests.

EMPEROR PENGUINS *Aptenodytes forsteri*

Emperor Penguins breed during winter, laying eggs in May and June, and, as individual pairs are not identified with a nest site or colony, individual recognition is always a problem, especially as the brooding birds move about appreciably and in severe conditions huddle into tight amorphous groups losing individual identity. Most colonies are on fast ice linked to the antaractic mainland, difficult or even hazardous of access. It is even difficult to obtain fair counts of numbers. In spite of all these deterrents, considerable research has been carried out on their anatomy and physiology, and on their adaptations for survival and breeding under winter antarctic conditions.

Much of our present understanding of the ecology of the Emperor Penguin is from research conducted since 1952 at the French base at Pointe Géologie, Adélie Land (papers by Prévost, Sapin-Jaloustre, Guillard, Isenmann, Arnaud, Birr, Mougin and Jouventin), linked to a major banding programme, allowing known-age identification of behaviour and mortality factors. Jouventin (1975) has summarised findings on mortality and population factors there for 1952-1970. No other antarctic studies can match this continuity. Le Maho, Delclitte & Groscolas (1977) record in fine detail temperature relations, metabolic rates and blood plasma constituents of fasting adults, a study only possible in nearby laboratory conditions.

Stonehouse (1953) studied breeding at the single rookery known for the Antarctic Peninsula. Budd (1962) describes techniques used to census rookeries and presents data on penguin numbers through the breeding season, estimating a world population then of 120,000 breeding pairs. Conroy (1975) gives estimates of breeding populations, across a variable number of years, at 7 rookeries, concluding that overall the population number appears stable.

According to Stonehouse (1970) Emperor Penguins have an incubation period of 62 days, and young chicks grow very slowly. The incubation period precludes summer breeding, as chicks could not then fledge at a favourable period for survival, while the slow growth is conditioned by food shortage and adverse temperature conditions. In the view of Isenmann (1971) the length of the 250 day breeding cycle is determined by the need to fit into the sea-ice cycle, from onset of stability to break-out in spring, as this penguin is crucially dependent on this ice for breeding. The birds' behaviour and biology over winter is however marked by the over-riding adaptations that conserve metabolic heat and thus extend the life of the lipid store. It is in this light that the lack of territorial behaviour, which allows huddling, and the facility to move about carrying the eggs and young chicks should be interpreted.

OTHER SPECIES

Comparatively little research has been done on other antarctic birds, but there are, however, good accounts of the breeding biology for all species. For example, Maher (1962), Brown (1966), Beck (1970) and Isenmann (1970) for the Snow Petrel *Pagodroma nivea*; Lacan (1971) and Beck & Brown (1972) for Wilson's Storm Petrel *Oceanites oceanicus*; Pinder (1966) and Isenmann (1970b) for the Cape Pigeon *Daption capensis*. Brook & Beck (1972) describe the occurrence of both Antarctic Petrels and Snow Petrels inland on the Theron Mountains, and Parmalee (1977) compares the adaptations of Antarctic Terns and Arctic Terns *Sterna paradisaea* to antarctic ecosystems. Watson *et al.* (1971) and Watson (1975) provide comprehensive bibliographes for all species.

CONCLUSION

This review has briefly touched on some of the work done in antarctic ornithology over the past two decades, since the great upsurge of effort heralded by the International Geophisical Year (IGY) 1958-59. The results achieved reflect an enormous commitment to research under difficult conditions — research made possible by the availability of safe and rapid transport.

Antarctic ornithology has matured astonishingly quickly to its present sophisticated, and increasingly laboratory oriented, status. It is, however, best developed in its details; the central problem of the long term regulation of bird numbers in the Antarctic region is still little understood. A major research effort is needed into factors determining abundance and distribution of species. What is missing especially is information on overwintering and feeding strategies. Without this information it is simply not possible to complete the accounts of species' biology and population dynamics.

Scientists and administrators carry a heavy responsibility to ensure that these unique assemblages of species survive into the future. They are at risk at present from the introduction of pollutants and avian diseases, but any economic exploration of Antarctica would greatly increase the risk of local extinctions.

Overall, the last 20 years have been ones of great achievement. Levick (1915) wrote "The habits of the Adélie Penguin have been dealt with from time to time by different writers, but the information to be had from these is fragmentary and misleading". At least for this species this is no longer true.

Acknowledgement: I gratefully acknowledge the help given by S. M. Martin, J. M. Davenport and P. M. Young in the preparation of this review.

References:

Ainley, D. G. 1975a. Development of reproductive maturity in Adélie Penguins. *In* Stonehouse, B. (ed) 1975: 139-157.

Ainley, D. G. 1975b. Displays of Adélie Penguins: a reinterpretation. *In* Stonehouse, B. (ed) 1975: 503-534.

Ainley, D. G. 1978. Activity patterns and social behaviour of non-breeding Adélie Penguins. *Condor* 80: 138-146.

Ainley, D. G. & Le Resche, R. E. 1973. The effects of weather and ice conditions on breeding in Adélie Penguins. *Condor* 75: 235-239.

Ainley, D. G. & Emison, W. B. 1972. Sexual size dimorphism in Adélie Penguins. *Ibis* 114: 267-271.

Andersson, M. 1973. Behaviour of the Pomarine Skua *Stercorarius pomarinus* Temm. with comparative remarks on Stercorariinae. *Orn. Scand.* 4: 1–16.

Austin, O. L. (ed). *Antarctic Bird Studies*. Antarctic Res. Ser. 12: 1-262. Washington.

Baker, J. R. 1973. Penguin and skua studies at Hallett Station. *Antarctic J. U.S.* 8: 200-201.

Beck, J. R. 1970. Breeding seasons and moult in some smaller Antarctic petrels. *In* Holdgate, M. W. *Antarctic Ecology* 1: 542-550. Academic Press: London.

Beck, J. R. & Brown, D. W. 1972. The biology of Wilson's storm petrel, *Oceanites oceanicus* (Kuhl), at Signy Island, South Orkney Islands. *Sci. Rep. Brit. Antarctic Surv.* 69: 1-54.

Behn, F., Goodall, J. D., Johnson, A. W. & Phillippi, B. 1955, The geographic distribution of the Blue-eyed Shags *Phalacrocorax albiventer* and *Phalacrocorax atriceps*. *Auk* 75: 6-13.

Bonner, W. N. 1964. Polygany and super-normal clutch size in the Brown Skua, *Catharacta skua lonnbergi* (Mathews). *Bull. Brit. Antarctic Surv.* 3: 41-47.

Brook, D. & Beck, J. R. 1972. Antarctic petrels, snow petrels and south polar skuas breeding in the Theron Mountains. *Bull. Brit. Antarctic Surv.* 27: 131-137.

Bourne, W. R. P. & Warham, J. 1966. Geographical variation in the giant petrels of the genus *Macronectes*. *Ardea* 54: 45-67.

Brown, D. A. 1966. Breeding biology of the Snow Petrel *Pagodroma nivea* (Forster). *ANARE Sci. Rep.* B (1) 89: 63.

Budd, G. M. 1962. Population studies in rookeries of the Emperor Penguin *Aptenodytes forsteri*. *Proc. Zool. Soc.* Lond. 139: 265-288.

Burton, R. W. 1968a. Breeding biology of the Brown Skua, *Catharacta skua lonnbergi* (Mathews) at Signy Island, South Orkney Islands. *Bull. Brit. Antarctic Surv.* 15: 9-28.

Burton, R. W. 1968b. Agonistic behaviour of the Brown Skua, *Catharacta skua lonnbergi* (Mathews). *Bull. Brit. Antarctic Surv* 16: 15-39.

Carrick, R. & Ingham, S. E. 1967. Antarctic sea birds as subjects for ecological research. *JARE Sci. Rep.* Special Issue 1: 151-184.

Carrick, R. & Ingham, S. E. 1970. Ecology and population dynamics of Antarctic sea birds. *In* Holdgate, M. W. (ed.) *Antarctic Ecology* 1: 505-525. Academic Press: London.

Conroy, J. W. H. 1975. Recent increases in penguin populations in Antarctica and the Subantarctic. *In* Stonehouse, B. (ed.) 1975: 321-336.

Derksen, D. V. 1977. A quantitative analysis of the incubation behaviour of the Adélie Penguin. *Auk* 94: 552-566.

Devillers, P. 1977. The skuas of the North American Pacific coast. *Auk* 94: 417-429.

Devillers, P. & Terschuren, J. A. 1978. Relationships between the Blue-eyed Shags of South America. *Gerfaut* 68: 53-86.

Downes, M. C., Ealey, E. H. M., Gwynn, A. M. & Young, P. S. 1959. The birds of Heard Island. *Rep. Aust. Nat. Antarctic Res. Exped.* 1B: 1-135.

Eklund, C. R. 1961. Distribution and life history studies of the South Polar Skua. *Bird Banding* 32: 187-223.

Emison, W. B. 1968. Feeding preferences of the Adélie Penguin at Cape Crozier, Ross Island. *Antarctic Res. Serv.*, Washington 12: 191-212.

Emlen, J. T. & Penney, R. L. 1966. The navigation of penguins. *Scient. Amer.* 215: 104-113.

Falla, R. A. 1964. Distribution patterns of birds in the Antarctic and high-latitude Subantarctic. *In* Carrick, R., Holdgate, M. & Prévost, J. (eds) *Biologie Antarctique*: 367-376. Hermann: Paris.

Furness, R. W. 1978. Energy requirements of seabird communities: a bioenergetic model. *J. Anim. Ecol.* 47: 39-53.

Gain, L. 1914. Oiseaux antarctiques. Deuxième expédition antarctique francaise (1908-1910). *Sci. Naturelles*: Documents Scientifiques. Maison: Paris.

Guthrie-Smith, H. 1925. *Bird Life on Island and Shore*. Blackwood: Edinburgh.

Hamilton, J. E. 1934. The sub-antarctic forms of the Great Skua (*Catharacta skua skua*). *Discovery Rep.* 9: 161-174.

Issenmann, P. 1970a. Contribution a la biologie de reproduction du Petrel des Neiges (*Pagodroma nivea* Forster) le probleme de la petite et de la grande forme. *L'Oiseau et R.F.O.* 40 (Special Number): 99-134.

Isenmann, P. 1970b. Note sur la biologie de reproduction comparée des damiers du cap *Daption capensis* aux orcades du sud et en Terre Adélie. *L'Oiseau et R.F.O.* 40 (Special Number): 135-141.

Isenmann, P. 1971. Contribution a L'ethologique et a L'ecologie du Manchot Empereur *Aptenodytes forsteri* (Gray) a la colonie de Pointe Geologie (Terre Adélie). *L'Oiseau et R.F.O.* 41 (Special Number) 9-64.

Johnstone, G. W. 1979. Agonistic behaviour of the giant petrels *Macronectes giganteus* and *M. halli* feeding at seal carcasses. *Emu* 79: 129-132.

Jouventin, P. 1975. Mortality parameters in Emperor Penguins, *Aptenodytes forsteri. In* Stonehouse, B. (ed.) 1975: 435-446.

Lacan, F. 1971. Observations ecologiques sur le petrel de Wilson (*Oceanites oceanicus*) en Terre Adélie. *L'Oiseau et R.F.O.* 41 (Special Number): 65-89.

Le Maho, Y., Delclitte, P. & Chatonnet, J. 1976. Thermoregulation in fasting emperor penguins under natural conditions. *Amer. J. Phys.* 231: 913-922.

Le Morvan, P., Mougin, J. L. & Prévost, J. 1967. Ecologie du skua Antarctique (*Stercorarius skua maccormicki*) dans l'Archipel de Pointe Geologie (Terre Adélie). *L'Oiseau et R.F.O.* 37: 193-200.

Le Resche, R. E. & Sladen, W. J. L. 1970. Establishment of pair and breeding site bonds by young known-age Adélie Penguins (*Pygoscelis adeliae*). *Anim. Behav.* 18: 517-526.

Levick, G. M. 1915. *Natural History of the Adelie Penguin. Nat. Hist. Rep.* British Antarctic "Terra Nova" Expedition 1910 1: 55-84.

Maher, W. J. 1962. Breeding biology of the Snow Petrel near Cape Hallett, Antarctica. *Condor* 64: 488-499.

Maher, W. J. 1966. Predation's impact on penguins. *Nat. Hist.* (New York) 75: 42-51.

Moynihan, M. 1959. A revision of the Family Laridae (Aves). *Amer. Mus. Novit.* 1928: 41 pages.

Moynihan, M. 1962. Hostile and sexual behaviour patterns of South American and Pacific Laridae. *Behaviour* Supplement 8.

Müller-Schwarze, D. 1968. Circadian rhythms of activity in the Adélie Penguin (*Pygoscelis adeliae*) during the austral summer. *Antarctic Res. Ser.* (Washington) 12: 133-149.

Müller-Schwarze, D. & Müller-Schwarze, C. 1971. Antipredator and social behaviour in Adélie Penguins (*Pygoscelis adeliae*). Antarctic *J. U.S.* 6: 99-100.

Murphy, R. C. 1936. *Oceanic Birds of South America*. Amer. Mus. Nat. Hist., New York.

Oelke, H. 1975. Breeding behaviour and success in a colony of Adélie Penguins, *Pygoscelis adeliae*, at Cape Crozier, Antarctica. *In* Stonehouse, B. (ed) 1975: 363-395.

Parmalee, D. F. 1977. Adaptations of Arctic terns and Antarctic terns within Antarctic ecosystems. *In* Llano, G. A. (ed) *Adaptations within Antarctic Ecosystems*: 687-702.

Parmalee D. F., Bernstein, N. & Neilson, D. 1978. Impact of unfavourable ice conditions on bird productivity at Palmer Station during the 1977-78 field season. *Antarctic J. U.S.* 13: 146.

Penney, R. L. 1968. Territorial and social behaviour in the Adélie Penguin. *Antarctic Res. Serv.* (Washington) 12: 83-131.

Pinder, R. 1966. The Cape Pigeon, *Daption capensis* Linnaeus, at Signy Island, South Orkney Islands. *Bull. Brit. Antarctic Surv.* 8: 19-47.

Prince, P. A. & Payne, M. R. 1979. Current status of birds at South Georgia. *Brit. Antarctic Surv. Bull.* 48: 103-118.

Procter, D. L. 1975. The problem of chick loss in the South Polar skua *Catharacta maccormicki. Ibis* 117: 452-459.

Reid, B. E. 1964. The Cape Hallett Adélie Penguin rookery — its size, composition and structure. *Rec. Domin. Mus. N.Z.* 5: 11-37.

Salomonsen, F. 1976. The South Polar skua *Stercocarius maccormicki* Saunders in Greenland. *Dan. Ornith. Foren. Tidsskr.* 703: 81-89.

Schnell, G. D. 1970. A phenetic study of the Suborder Lari (Aves). *Syst. Zool.* 19: 35-57; 264-302.

Sladen, W. J. L. 1958. The Pygoscelid Penguins. I. Methods of study; II. The Adélie Penguin. *Falk. Isl. Dep. Surv. Sci. Rep.* 17: 1-97.

Sladen, W. J. L., Le Resche, R. E. & Wood, R. C. 1968. Antarctic avian population studies 1967-68. *Antarctic J. U.S.* 3: 247-260.

Spellerberg, I. F. 1971a. Aspects of McCormick skua breeding biology. *Ibis* 113: 357-363.

Spellerberg, I. F. 1971b. Breeding behaviour of the McCormick skua *Catharacta maccormicki* in Antarctica. *Ardea* 59: 189-230.

Spellerberg, I. F. 1975. The predators of penguins. *In* Stonehouse, B. (ed) 1975: 413-434.

Spurr, E. B. 1974. Individual differences in aggressiveness of Adélie Penguins. *Anim. Behav.* 22: 611-616.

Spurr, E. B. 1975a. Communication in the Adélie Penguin. *In* Stonehouse, B. (ed) 1975: 449-501.

Spurr, E. B. 1975b. Behaviour of the Adélie Penguin chick. *Condor* 77: 272-280.

Spurr, E. B. 1975c. Breeding of the Adélie Penguin *Pygoscelis adeliae* at Cape Bird. *Ibis* 117: 324-338.

Spurr, E. B. 1975d. Orientation of Adélie Penguins in their territories. *Condor* 77: 335-337.

Spurr, E. B. 1978. Diurnal activity of Adélie Penguins *Pygoscelis adeliae* at Cape Bird. *Ibis* 120: 147-152.

Stonehouse, B. 1953. The Emperor Penguin *Aptenodytes forsteri. Falkl. Isl. Dep. Surv. Sci. Rep.* 6: 33 pages.

Stonehouse, B. 1956. The Brown Skua *Catharacta skua lonnbergi* (Mathews) of South Georgia. *Falkl. Isl. Dep. Surv. Sci. Rep.* 14: 25 pages.

Stonehouse, B. 1963. Observations on Adélie Penguins (*Pygoscelis adeliae*) at Cape Royds, Antarctica. *Proc. XIII Int. Orn. Congr.* 1962: 766-779.

Stonehouse, B. 1965. Birds and Mammals. *In* Hatherton, T. (ed) *Antarctica*: 153-186. Reed: Wellington.

Stonehouse, B. 1967. The general biology and thermal balances of penguins. *Adv. Ecol. Res.* 4: 131-196.

Stonehouse, B. 1970. Adaptations in polar and subpolar penguins (*Spheniscidae*). *In* Holdgate, M. W. (ed) *Antarctic Ecology* 1: 526-54. Academic Press, London.

Stonehouse, B. (ed) 1975. *The Biology of Penguins.* The Macmillan Press, London.

Swales, M. K. 1965. The sea birds of Gough Island. *Ibis* 107: 17-42, 215-229.

Taylor, R. H. 1962. The Adélie Penguin *Pygoscelis adeliae* at Cape Royds. *Ibis* 104: 176-204.

Tenaza, R. 1971. Behaviour and nesting success relative to nest location in Adélie Penguins (*Pygoscelis adeliae*). *Condor* 73: 81-92.

Tickell, W. L. N. 1962. The Dove Prion *Pachyptila desolata* Gmelin. *Falkl. Isl. Dep. Sci. Rep.* 14: 55 pages.

Todd, F. S. 1978. Establishment of a high antarctic penguin colony and controlled environment breeding of Adélie Penguins (*Pygoscelis adeliae*). *Antarctic J. U.S.* 13: 153-154.

Trillmich, F. 1978. Feeding territories and breeding success of south polar skuas. *Auk* 95: 23-33.

Voisin, J. F. 1970. On the specific status of the Kerguelen shag and its affinities. *Notornis* 17: 286-290.

Watson, G. E. 1975. *Birds of the Antarctic and Sub-antarctic.* Antarctic Res. Ser. Amer. Geophys. Union, Washington: 350.

Watson, G. E., Angle, J. P., Harper, P. C., Bridge, M. A., Schlatter, R. P., Tickell, W. L. N., Boyd, J. C. & Boyd, M. M. 1971. *Birds of the Antarctic and Subantarctic.* Antarctic Map Foilio Series, Folio 14. Amer. Geograph. Soc.

Wood, R. C. 1971. Population dynamics of breeding south polar skuas of unknown age. *Auk* 88: 805-814.

Yeates, G. W. 1971. Diurnal activity in the Adélie Penguin (*Pygoscelis adeliae*) at Cape Royds, Antarctica. *J. Nat. Hist.* 5: 103-112.

Yeates, G. W. 1975. Microclimate, climate and breeding success in Antarctic penguins. *In* Stonehouse, B. (ed) 1975: 397-409.

Young, E. C. 1963a. The breeding behaviour of the south polar skua *Catharacta maccormicki. Ibis* 105: 203-233.

Young, E. C. 1963b. Feeding habits of the south polar skua *Catharacta maccormicki. Ibis* 105: 301-318.

Young, E. C. 1970. The techniques of a skua-penguin study. *In* Holdgate, M. W. (ed). *Antarctic Ecology* 1: 568-584. Academic Press: London.

Young, E. C. 1972. Territory establishment and stability in McCormick's skua. *Ibis* 114: 234-244.

Young, E. C. 1978. Behavioural ecology of *lonnbergi* skuas in relation to environment on the Chatham Islands, New Zealand. *N.Z. J. Zool.* 5: 401-416.

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Ornithology in Canada in the 20th Century: a capsule overview

by Henri Ouellet & W. Earl Godfrey

The study of birds has had a long tradition in Canada but it was not until the turn of the century that an important work on the bird fauna of the entire country became available (*Catalogue of Canadian Birds*, 1909, *J. & J. M. Macoun*). This landmark, which brought together the results of early surveys in various regions, as well as previously published data, preluded more comprehensive and detailed works.

Early in the century the National Museum of Canada, in Ottawa, became the major centre of Canadian ornithological research mainly through the efforts of P. A. Taverner, ornithologist with the Museum from 1911 to 1942. Taverner left an impressive legacy through his numerous ornithological investigations. In addition to conducting a vigorous programme in bird distribution and taxonomy, he expanded the collection from about 4000 to more than 30,000 specimens during his tenure. He conceived a remarkable system of maps and index reference cards to record bird distribution, still currently in use. He recognised the need for extensive field surveys and organised many field parties to various parts of the country to obtain specimens and first hand distribution data. His publications number about 300. He authored *Birds of Canada* (1934) and its predecessors *Birds of Eastern Canada* 1919 and *Birds of Western Canada* 1916), which became the basic references on Canadian birds for several decades. They greatly popularised ornithology at a time when there was little general interest in birds in Canada, outside naturalist groups. His concern for conservation made him instrumental in the creation of Point Pelee National Park and the Bonaventure

Island Bird Sanctuary. A. L. Rand succeeded Taverner, and in the next few years continued the survey of the Canadian avifauna. He published important papers on bird distribution and taxonomy.

Following Rand's departure from the Museum in 1947, W. Earl Godfrey in the period 1947-1976 undertook large scale surveys in areas of Canada heretofore poorly known and published on various aspects of birds, particularly their distribution and taxonomy. The publication in 1966 and 1967 respectively of his major work *The Birds of Canada* and *Les Oiseaux du Canada* constitutes another landmark in Canadian ornithology both in providing an accurate account of the Canadian bird fauna and in stimulating popular ornithology from coast to coast. A second revised and updated edition, now in preparation, is scheduled to appear in 1981. In 1977, Henri Ouellet was appointed Curator of Birds. Current museum research projects deal primarily with taxonomy, systematics, zoogeography, and behaviour, with a monograph on Ivory Gull *Pagophila eburnea* behaviour in preparation by S. D. MacDonald. The main groups of birds currently under study comprise northern gull species, tetraonids, and scolopacids. A comprehensive study of the distribution of the birds of the Quebec-Labrador Peninsula and adjacent islands is in preparation also. The national ornithological collections, currently comprising some 100,000 skins, skeletons, fluid-preserved specimens, eggs and nests, are particularly rich in breeding material.

The Royal Ontario Museum, in Toronto, originally the Royal Ontario Musuem of Zoology, was founded in 1914. L. L. Snyder, Curator of Birds from 1935 to 1963, organised and participated in an extensive faunal survey of Ontario, built up an important ornithological library, was active in conservation, developed the bird collection from some 5000 to about 100,000 skins, eggs, and nests. Now Canada's largest, the ROM collection currently contains some 150,000 specimens. Snyder published numerous papers and two books: *Ontario Birds* (1951) and *Arctic Birds of Canada* (1957). James L. Baillie, Assistant Ornithologist from about 1923 to 1970, sought out much information on the history of ornithology in Ontario, maintained intricate distribution files, was deeply involved in conservation, and excelled in the popularization of ornithology both as a science and a hobby. Following Snyder's retirement, ornithological research at ROM took on a new direction in that systematic studies involving sophisticated numerical methods were introduced, resulting in several publications, thus starting a new trend at that museum. Concurrenty, detailed investigations on the distribution of birds in Ontario along with ecological and behaviour studies are being pursued. The present curators are A. J. Baker, J. C. Barlow, and R. D. James.

Important ornithological work is conducted also in other provincial museums, particularly in New Brunswick, Alberta, and British Columbia.

In 1917, the Government adopted the Migratory Birds Convention Act. This led to the appointment of Hoyes Lloyd in 1918 as first superintendent of wildlife in the Parks Branch of the Department of the Interior. Lloyd, in his responsibility for enforcing regulations, developed a network of officers who undertook ornithological work in addition to their conservation duties and he himself took an active part in ornithological activities and continued to do so for many years after his retirement in 1943. He served as President of the American Ornithologists' Union from 1945 to 1948.

H. F. Lewis, who had served under Lloyd as Chief Migratory Bird Officer for Quebec and Ontario since 1920, assumed in 1944 the position of Superintendent of Wildlife Protection in Canada. In 1947, with the establishment of the Canadian Wildlife Service, he was appointed its first Chief and he ably guided it through its critical formative years. He is responsible for the implementation of an ornithological research programme by this agency. The Canadian Wildlife Service currently supports annually some 100 ornithological projects which are mainly species oriented, but which range in content from theoretical ecology, breeding biology, distribution, population dynamics, behaviour, and migration, to effects of pollutants and pesticides on birds, biometrics, management, hazards to aircraft, and conservation of birds in general. It maintains the headquarters of bird banding in Canada. Approximately 80% of the current projects deals with applied ornithology. The staff consists of nearly 60 ornithologists and bird biologists. Notable among the numerous publications are the following: *The Murres* (L. M. Tuck, 1960); *Histoire Naturelle du Gode*, Alca torda . . . (J. Bédard, 1969); *The Snipes* (L. M. Tuck, 1972); *Buffleheads* (A. J. Erskine, 1972); and *Atlas of Eastern Canadian Seabirds* (R. G. Brown *et al*, 1975).

Ornithological work, oriented primarily toward management, is also carried out in various provincial or territorial game agencies. A number of consultant agencies have in recent years been engaged in such projects, which are usually restricted to providing solutions to well defined problems, usually involving applied ornithology.

A number of Canadian universities have undertaken important ornithological research programmes during the last 50 years, notable among which were the pioneer work and experiments on bird migration of William Rowan, at the University of Alberta in the 1920's and 1930's. Currently ornithological research is conducted at other Canadian universities on a variety of subjects ranging from ecology, behaviour, song, acoustics, physiology, migration, and speciation, to morphology, systematics, management, and conservation. The contribution of the larger universities, which are often better equipped and funded, is particularly important; but the results from smaller universities are far from negligible.

Independent workers, often amateurs, have contributed significantly to Canadian ornithology. J. H. Flemming, President of the American Ornithologists' Union from 1932 to 1935, published some 80 papers on taxonomy and distribution and built an important collection (world-wide in representation) of nearly 33,000 specimens, which were bequeathed to the Royal Ontario Museum after his death in 1940, along with his extensive library. L. M. Terrill published over 40 papers on life histories and distribution in Quebec between 1903 and 1968. Louise de Kiriline Lawrence, in addition to publishing several life history papers, wrote a comprehensive monograph on woodpecker biology. A number of independent workers and amateurs are now engaged in various ornithological undertakings and the prospect of eventual valuable publications is excellent. The work of talented bird illustrators such as Alan Brooks, Robert Bateman, John Crosby, J. L. Grondin, J. F. Lansdowne, Glen Loates, and T. M. Shortt enhances publications in this and other countries.

Detailed provincial works are available for Newfoundland, Nova Scotia, Prince Edward Island, New Brunswick, northern Quebec and Labrador, Ontario, Alberta, and British Columbia and there are annotated lists for substantial parts of the others. Nest record schemes administered by various federal and provincial agencies exist for all provinces.

Although Canada has been very active in ornithology, particularly since the late 1940's, much remains to be done: the ornithological exploration of the country has not yet been completed, taxonomic problems remain to be solved, various in-depth ecological studies are just beginning to yield stimulating results, and current behaviour studies are providing important new data.

We regret that we cannot mention here all ornithologists whose work is so deserving. We thank the following for various information: J. C. Barlow, F. G. Cooch, V. M. Humphreys, R. D. James, and Rev. R. C. Long.

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Fifty years of American Ornithology

by Robert E. Ricklefs and Frank B. Gill

Neither of us is approaching his 40th, let alone 50th birthday, and so our appraisal of the last 50 years of American ornithology is strongly influenced by current trends and our own interests*. Furthermore, as travel and communications between nations have increased, and as English has become the common language of science, differences in the expression of ornithological interest in different countries have faded and ornithology has become truly international. Yet many aspects of American ornithology have both developed independently and retained a distinctive flavour. We shall concentrate on these while giving credit where it is due to European influences on our endeavours. We shall also indicate what we believe are some ongoing changes in the character of American ornithology.

At the beginning of the twentieth century, American ornithology was preoccupied with coming to grips with its avifauna through taxonomic and distributional analyses. These studies were initiated within the natural history museums in Philadelphia, Washington, Boston, and New York. But the foundations of a new American ornithology also were being laid at this time, particularly by Frank M. Chapman at the American Museum of Natural History in New York. Not content with traditional faunistics, he began to blend evolutionary biogeography, speciation, and ecological associations into his studies of the Colombian (1917) and Ecuadorian (1926) avifaunas. Chapman assembled a staff at the American Museum whose vitality and productivity during the 1930's and 1940's shifted the centre of systematic ornithology from the Old World to the New World, but also influenced the development of ornithology more generally. This group included John Zimmer (studies of Peruvian birds, 1931 and following), James Chapin (*Birds of the Belgian Congo*, 1932), R. C. Murphy (*Oceanic Birds*

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*For a more detailed and balanced statement, see E. Mayr, "Materials for a history of American ornithology," the Epilogue to E. Stresemann (1975), *Ornithology from Aristotle to the present.* Cambridge, Mass.: Harvard University Press.

of South America, 1936), Ernst Mayr (*Systematics and the Origin of Species*, 1942), and later Thomas Gilliard, Dean Amadon, and Charles Vaurie.

The new blend of ecology, speciation, and evolution that characterised American ornithology was gradually assimilated into American universities, beginning with the appointment in 1915 of Arthur A. Allen to a position as ornithologist at Cornell. Similar centres appeared at Berkeley with Joseph Grinnell and A. H. Miller, at Michigan with Jocelyn Van Tyne, and at Illinois with S. Charles Kendeigh. Their families of students are directly responsible for the flowering of ornithology in academic institutions in the United States and Canada. It is no accident that when 244 college and university professors, mostly in their 30's and 40's, responded recently to an AOU questionnaire concerning their graduate institutions, 40% had received their degrees from Berkeley, Illinois, Wisconsin, Michigan, and Cornell, with the remaining 60% spread thinly among 66 other institutions.

The development of ornithology within academic institutions produced such distinctive American contributions as studies on hybridization by Charles Sibley and Lester Short, on community ecology and diversity by Robert MacArthur, and on the ecology of territorial and mating systems by F. A. Pitelka, J. Brown, and G. Orians. These efforts, in which the influence of the University of California at Berkeley has predominated, are currently being expressed in applications of genetic analyses to the structure of populations, of the molecular biology of proteins and DNA to studies of phylogenetic relationships among species and higher taxa, and of evolutionary thinking to the study of behavioural ecology. This integrative approach to avian evolution and ecology has been supported by the development of new techniques, such as the use of vocal characters analyzed spectrographically, pioneered by W. J. Borror and applied by Wesley Lanyon, W. John Smith, and others, to studies of systematics, communication, song development, and population structure.

To a large degree, studies in ecology developed in parallel on both sides of the Atlantic. American ornithologists, especially Robert MacArthur and Gordon Orians, were greatly influenced by Charles Elton, David Lack, and John Crook. The intense interest of Americans in island biogeography also can be traced to influences from Great Britian, whose ornithologists have had an inordinate amount of access to islands.

North American contributions to avian physiology in the last 50 years match advances in systematics and ecology. From W. Rowan's classical work on the relation of the gonadal cycle in juncos to photoperiod, sprouted a variety of American studies on physiology and endocrinology, ranging from D. S. Farner and J. R. King's investigations of annual cycles, including moult, which raised the White-crowned Sparrow to the status of the laboratory mouse, to D. S. Lehrman's studies on endocrine control of behaviour in the Ring Dove, ornithology's laboratory rat. Another distinctively American direction in physiology was the comparative approach of George Bartholomew, William Dawson, and Knut Schmidt-Nielsen, whose studies of the physiological ecology of birds concentrated on problems of heat water, and salt balances in desert-inhabiting species, and the energetics of free-living birds. Among studies on the energetics of birds and their overall functioning within the ecosystem, all roots can be traced back to S. Charles Kendeigh, of the University of Illinois, and his student, Eugene P. Odum.

These increasingly theoretical or technological disciplines of ornithology have been matched by comprehensive life-history and population studies of colour-marked individuals. Margaret Nice's work on the Song Sparrow was a model study, followed by Harold Mayfield's on the Kirtland's Warbler and most recently by Val Nolan's invasion of the privacy of the Prairie Warbler. American ornithologists, particularly Alexander Wetmore and R. M. de Schauensee, characterised tropical American avifaunas in detail. Life-history studies of Neotropical birds, pioneered by Frank M. Chapman, were extended by Alexander Skutch in his remarkable, life-long, comparative study of the nest life of tropical songbirds.

Conservation is not a uniquely American enterprise by any means, yet there are few programmes anywhere that can match joint U.S. and Canadian efforts to understand, monitor, and manage populations of waterfowl, or to protect such endangered species as the Peregrine Falcon, California Condor and Whooping Crane. Our strong tradition of wildlife conservation may derive in part from the fact that industrialised society was late in coming to the Americas and encroachment on habitats and species have come largely within the period of widespread interest in wildlife. America's conservation conscience was greatly lifted by Aldo Leopold, who also helped to institutionalise wildlife studies, most notably at the University of Wisconsin.

Along with the development of scientific ornithology in the United States and Canada, contributions from amateurs and avocational ornithologists, professionally involved in other fields, also grew. Arthur Cleveland Bent, chronicler of American bird lives, was an amateur. Frank Chapman and Arthur Allen catalysed popular interest in birds, partly through personal appearances and partly through the use of bird photography in popular articles. Crawford Greenewalt's contributions to the physics of sound production in birds, the basis of iridescence in hummingbird feathers, and the aerodynamics of bird flight, and Frank Preston's theoretical considerations of the abundance and rarity of species, illustrate the coupling of avocational interest in birds with other professional expertise.

Early in this century, Frank M. Chapman began the tradition of Christmas Counts, organizing amateurs to census our wintering avifaunas. The 70 years of data now accumulated are a major resource for understanding bird population trends in the U.S.

Bird watching grew rapidly as a popular hobby with the publication of Roger Tory Peterson's system for field identification. Monitoring the spectacular spring and fall movements of North American breeding birds also became popular among amateurs, whose observations have become a major component of modern American ornithology. These efforts were highlighted by Frederick Lincoln's 1939 book *Migration of Birds*, and by George Lowery's work relating transgulf migration to weather and they are complemented by recent studies by William Keeton and Steve Emlen on homing and orientation, an area in which collaboration with European, especially German, ornithologists has been productive.

In recent years, certainly, the vast resources of American academic institutions, funding agencies, conservation organizations and popular press have made a big difference in the growth and character of American ornithology. Millions of dollars each year are spent on pure research, survey, husbandry, and conservation of birds. Somewhere about 1000 professional ornithologists are employed by universities and colleges. Between 4000 and 5000 American college students take courses in ornithology each year, while hundreds of graduate students receive advanced degrees based on studies concerning birds. Serious amateur ornithologists number in the thousands (c. 4500 belong to the 3 major national ornithological societies) and recreational ornithologists with a deep concern for conservation and the conditon of the environment number in the millions. By sheer weight of membership and pages of publications, the American ornithological societies contribute disproportionately to the world supply of information concerning birds. American ornithology has thus grown from a few contributions from the major museums to a broadly-based discipline of academic, professional, amateur, and government involvement, unparalleled elsewhere in the world.

As ornithology has developed during the past 2 decades, its character also has changed. By elevating ornithological research to the status of a well-funded scientific discipline, government and academia have attracted considerable outside talent lacking the natural history background of earlier ornithologists. Many research programmes now focus upon problems of general interest to ecologists, ethologists, physiologists, and evolutionists, rather than upon problems specifically motivated by interest in birds. In the survey mentioned earlier, of 893 M.S. and Ph.D. theses written since 1970, 46% were in the area of ecology, 23% in ethology/behaviour, and 11% each in physiology and wildlife. The remaining 10% included the more traditional topics of anatomy, palaeontology and systematics.

The trend leading from systematics, anatomy, etc. to ecology and behaviour reflects the changing interest of students from taxonomically-oriented studies to question-oriented studies, and also the fact that systematic and anatomical work on birds is well advanced compared to other taxa. Furthermore, so little fossil material exists and genetic studies are so difficult that, for evolutionary problems, studies of birds are not attractive.

While modern trends in research on birds are certainly consistent with and appropriate to the interests of American science, they also have two important implications for American ornithology. The first is that the museum tradition is slowly dying. Although museums have vast resources for systematic, evolutionary and ecological studies, and Federal support of collections is increasing, it is difficult to find well-trained curators among today's students. This despite the fact that the kinds of background studies that have made birds so attractive as subjects of biological research were largely inspired from within the museum tradition. Certainly the prominent role that birds have played in the study of evolution, speciation, island biogeography, and community organization springs directly from the drawers upon drawers of specimens in museum cabinets—but students rarely go to the source anymore.

The second implication is that the gap between the professional and the amateur ornithologist is widening. This is inevitable as research comes to rely on more complicated, often quantitative techniques and addresses more erudite questions; it is also unfortunate because professional ornithologists often got their start as amateurs (we both did), whereas this is less and less often the case nowadays. In addition, the data gathered by amateurs on breeding bird densities, number of eggs, nesting success, and so on, plus the insights gained through pleasant hours of birdwatching, have traditionally catalysed the scientific study of population biology, life-history patterns, ethology, and behavioural ecology. Practically the only facets of ornithology not cut by amateur ornithologists or by the natural history-museum tradition were anatomy and physiology.

Balancing these trends in ornithology are improving attitudes towards the application of scientific methods to studies of birds. Traditionally such studies were descriptive and subjective, their value coming from highly developed intuitions about nature. During the 1960's, as ornithologists began to rub shoulders with molecular and cellular biologists, there was a reaction against the old approach. Some ornithologists embraced numerical taxonomy and mathematical models of natural systems to the point that these tools became goals in themselves; but while much intellectual excitement was generated, many of the questions posed were not answered to general satisfaction, and great promise was largely unfulfilled. We are now witnessing 3 trends in avian studies that reflect a more mature and balanced attitude. First, students are learning again that the best inspiration is still to come from Nature herself. The new questions of the 1960's and 1970's primarily demonstrated how little we knew about birds. Theory is likely to provide useful inspiration only when it is founded upon a strong base of empirical knowledge, and models are only a way of expressing our understanding of nature and of suggesting tests of the validity of our inspirations, certainly not themselves a source of inspiration. Second, our students are becoming much more expert in the analysis and statistical interpretation of their data. The importance of this is that ornithologists are establishing a better sense of criteria for agreeing on statements about nature. Whereas in the past the existence of many purported patterns was the subject of intense debate, we now have better tools for picking apart relationships and assigning a level of statistical validity to them. Third, ornithologists are becoming experimentalists. Although there has been a long tradition of experimentation in physiology and behaviour, manipulations are being applied more and more in ecological and other field studies.

We are hopeful that a return to Nature for inspiration combined with more general agreement on what constitutes scientific progress will lead to a renewed flourishing of ornithilogical study in America, in which regard, we modestly suggest that no discussion of American ornithology would be complete without mentioning the important contributions of our own studies on development rates in birds and on the behavioural ecology of nectar-feeding birds.

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Ornithological research in tropical America — the last 35 years

by D. W. Snow

A major part of the research literature on tropical American birds is published in American journals, and for this reason is not as well known to European ornithologists as it might be. And for obvious reasons – geographical proximity, and the large number of active ornithologists based on universities and museums – the American contribution is likely to preponderate still more in the future. Most of the research is biological – that is, it deals with the ecology and behaviour of birds; it is no longer a matter of simply describing and cataloguing. A hundred years ago the position was very different: European ornithologists were then in the forefront, most of the bird species had been discovered and their geographical variation was beginning to be worked out, but biological studies were still far in the future. The change of emphasis, which coincides closely with the end of the last World War, provides a convenient starting point for the present review.

The aim of this paper is to draw attention to some of the newer developments in tropical American ornithology, especially for readers who have not had access to the large and scattered literature. The topics dealt with inevitably reflect to some extent a personal bias; but some of them, at least, would take a prominent place in any review of the subject. Some topics – notably migration and breeding seasons – have been omitted, for various reasons. Migration within South America is still very little understood; it has been reviewed by Sick (1968), but few recent advances have been made, and nothing comparable to what is now known of the migration of African birds within Africa. Breeding seasons and annual cycles have been investigated in detail in a few areas, but no general synthesis has been made; and information for large areas at low latitudes, especially the Amazonian forest, is very sparse.

Ornithological exploration

The pioneering stage in the ornithological exploration of tropical America, by expeditions and professional collectors financed by European and North American museums, ended with the second World War. By the end of this stage the foundations of knowledge of the distribution and geographical variation of the Neotropical avifauna had been securely laid. The results were brought together in the monumental *Catalogue of Birds of the Americas,* published between 1918 and 1949, a work which is still the starting point in any serious avifaunistic research. Ornithological exploration has continued since then, but it has in the main been differently organized. Traditional exploration has been continued on a regional basis by the major South American museums, including the private Phelps Museum in Venezuela (which is shortly to become the Venezuelan national ornithological collection). As a result many gaps in knowledge have been filled in, and Venezuela in particular, an extremely rich country which had been neglected in the earlier years, has now one of the best known avifaunas. In addition to locally based exploration of the traditional kind, a number of more or less long-term field stations have been established (some based on existing institutions), and these have resulted in very detailed knowledge of local avifaunas. Examples are Rancho Grande in Venezuela (cloud forest of the coastal cordillera), the Museum Goeldi in Brazil (lowland forest of lower Amazonia), the Rio Palanqui Research Station in Ecuador (humid forest on the western slopes of the Andes), and Cocha Cashu Station in the Manu National Park in Peru (lowland forest of upper Amazonia). In the last of these, over 470 bird species have been recorded within 5 km of the Station, making it the richest forest area known in the world.

Outstanding among the intensive regional surveys has been the work of members of the Louisiana State University's Museum of Zoology, who since 1961 have been working in the Peruvian Andes and at the base of the Andes on the eastern side. This geographically complex area has produced an extraordinary succession of new species, many of them very distinct. When the last was described (*Xenoglaux loweryi*, a tiny owl with several peculiar features including a very reduced sternal carina – O'Neill & Graves 1977), the score stood at 21 new species, 4 of which have been placed in new genera; and there are certainly more to come. The wealth of this area may be better appreciated when it is compared with the rest of the continent. In the years 1941–1965 20 new species were discovered in other parts of South America. They include no new genera; only a few of them are at all distinct from known species, and most can reasonably be included as allospecies (geographical representatives), or even subspecies, of species already known (Mayr 1957, 1971). It is especially noteworthy that the continuing ornithological exploration of the Andean slopes of Ecuador, Colombia and Venezuela has produced nothing comparable to Peru. When the Peruvian discoveries have been completed (if they ever are) it will be a fascinating task to analyse them in relation to the rest of the South American avifauna and to what is known of past climatic and geological changes. Does this area harbour, in addition to more recent elements, a relict avifauna which has disappeared from the rest of the continent?

Avifaunistic analyses

The tropical American avifauna is now sufficiently well known for zoogeographical analysis, and an increasing number of such studies have appeared in recent years. Vuilleumier (1969 a, b) examined geographical patterns of differentiation and speciation in Andean birds; Mayr & Phelps (1967) analysed the endemic birds of the Guiana highlands (for which they coined the name "Pantepui") and discussed their origin; and Short (1975) analysed the avifauna of the *chaco* region, the well-defined block of arid woodland in Paraguay, Bolivia and northern Argentina, and related it to the avifauna of other arid woodland areas of the continent. Perhaps the most fruitful studies, however, have been Haffer's analyses of speciation patterns in tropical forest areas, especially Amazonia (Haffer 1970, 1974; Simpson & Haffer 1978). Haffer's main thesis is that during arid periods in the Quaternary (probably contemporaneous with glacial periods in the north) the Amazonian forest was reduced to a number of isolated pockets or "refuges" (corresponding to areas where rainfall is especially high today), that the isolated sections of species thus split differentiated from one another under the differing environmental influences to which they were subjected, and that when the forests subsequently spread with the return of more humid conditions the isolated populations spread with them and came into contact again. When they came into contact various outcomes were possible, depending on the degree of differentiation and reproductive incompatibility achieved in isolation. Haffer's hypothesis provides a convincing explanation of many present-day distribution patterns; it is particularly convincing in the case of groups of closely related species which abut on one another's ranges without any overlap (so-called "parapatric" species). This is a rather common situation in Amazonian birds. In such cases it seems that the species concerned have evolved effective isolating mechanisms preventing interbreeding, but are still too similar ecologically to be able to penetrate each other's ranges and coexist. In other cases more or less narrow zones of hybridization seem to mark the areas where formerly isolated forms, which have not achieved reproductive isolation, have come into contact again.

Haffer's hypothesis helps to explain Amazonia's great richness in bird species. It provides the element of geographical isolation necessary (according to generally accepted theory) for species formation. But it clearly does not go the whole way to explaining South America's extraordinary diversity of species. Geomorphological evidence will have to be taken into account. For instance, from the beginning of the Tertiary until the mid-Tertiary northern South America was represented by 3 separate land-masses: a northern Guianan region, a southern Brazilian region, and to the west an emergent Andean region (Simpson & Haffer 1978). The present Neotropical avifauna must have been formed by a fusion of the avifaunas of these 3 areas, with a further contribution from North or Central America (Mayr 1964).

Species studies

There have been a considerable number of these, but the number of species dealt with is still a tiny fraction of the whole. William Beebe, working mainly in British Guiana (now Guyana), and Frank M. Chapman, working on Barro Colorado Island in Panama, were the 2 pioneers. Since their time, 4 long-term residents have added greatly to our knowledge of individual species. In Central America, Dr A. F. Skutch has produced a volume of publication on the biology, especially the breeding, of single species that is unrivalled in quantity and in the length of period of sustained publication (1930 to the present). His studies have been brought together in several books, in addition to papers in journals, the greatest number in 3 volumes of the Pacific Coast Avifauna series published by the Cooper Ornithological Society. Dr H. Sick, long resident in Brazil, has contributed greatly to knowledge of the birds both of Amazonia and of eastern Brazil; among his many notable discoveries may be mentioned the nest of the Amazonian Umbrellabird *Cephalopterus ornatus* (Sick 1954). F. Haverschmidt, resident in Surinam from 1946 to 1968, added greatly to knowledge of the feeding habits and breeding of birds in that country. P. A. Schwartz, resident in Venezuela from the early 1950s until his sudden death in April 1979, produced many important contributions to the biology of a wide range of species, from tinamous, hawks and toucans to finches and manakins. His death cut short an ornithological career that was approaching its peak of productivity, and tragically much partially completed research of the greatest interest will now remain unpublished.

Single species studies in depth have also been made by ornithologists temporarily resident at field stations. Dr E. O. Willis, working in several different areas from Panama to Brazil, added tremendously to our knowledge of antbirds and other species that accompany army ants. The studies by my wife, Barbara K. Snow, and myself in Trinidad, Guyana and other parts of northern South America have been concerned mainly with cotingas, manakins, hummingbirds and the Oilbird *Steatornis caripensis*. In studies such as these there has understandably been some bias towards species which are reasonable easy to locate, especially those that have fixed display areas or smallish territories in the lower strata of the forest. This has, in fact, meant that a great deal of attention has been given to lek birds, and one outcome of this has been to emphasize an important difference between Neotropical and African forest birds. There are apparently no lek species in the African forest avifauna, and this is probably related to the comparative rarity of specialised frugivores in Africa, which in turn is related to the comparative poverty of the African forest flora (Snow 1979).

Population dynamics

A few long-term studies based on colour ringing have begun to give estimates of annual survival of forest birds. Calculation of survival rates from returns of ringed birds by members of the public, the usual method in Europe, is of course generally impossible in tropical America and out of the question for forest birds. Male Black-and-white Manakins *Manacus manacus* in Trinidad were found to have an annual survival rate of at least 89% (Snow 1962a), and an indirect estimate for the Golden-headed Manakin *Pipra erythrocephala* gave a figure of about 90% (Snow 1962b). These figures are remarkably high by comparison with survival rates of small passerines in temperate latitudes, but they seem to be well founded. Continued monitoring of the Trinidad Black-and-white Manakin populations over a further 10 years by Dr A. Lill (Snow & Lill 1974) gave an absolute minimum survival rate of 79%, based on recaptures. Allowing for individuals that there was good reason to suppose must have escaped capture, the true survival was probably substantially higher than 79%. The greatest minimum age at recapture for a Black-and-white Manakin was 14 years, and for a Golden-headed Manakin 12 years. The 14-year-old bird had probably been a continuous territory-holder at a lek for at least 11 years.

The only other figures available for forest birds are those obtained by Willis for 3 species of antbirds in Panama. The most complete data, for the Spotted Antbird *Hylophylax naevioides*, indicated an annual survival of 81.2%; for the two other species, *Gymnopithys bicolor* and *Phaenostictus mcleannani*, the figures were 71% and 70% respectively (Willis 1974).

Such high annual survival rates must mean that breeding success is very low, if the populations are to remain more or less stable; and in fact most studies have shown that a very high percentage of nests in American tropical forests fail. For the Black-and-white Manakin in Trinidad, only 19% of nests were successful (i.e. produced at least one young) (Snow 1962a), for the hummingbird *Glaucis hirsuta* 17% (Snow & Snow 1973), and for the thrushes *Turdus fumigatus* and *T. albicollis* 21% (Snow & Snow 1963). For the Spotted Antbird in Panama, Willis (1974) recorded a success rate of less than 13%. These and other figures based on smaller samples indicate that very low success rates are typical of tropical American forest birds.

Mixed species flocks

Foraging flocks composed of different species of birds are a feature of tropical forest in many parts of the world. A great advance in understanding their composition and function has resulted from recent studies in tropical American forests, especially those by Willis (1967, 1972, 1973) and Munn (1979). Willis worked out in great detail the social organization of 2 antbird species which are closely associated with army ants, accompanying them and feeding on the insects which they flush. He found that there is a system of overlapping home ranges. Each established pair owns a territory, but the territory is not exclusive: neighbouring birds are allowed to trespass, but they are subordinate to the owners. Thus as an army ant column moves on, passing from one pair's territory to another, different individual birds are dominant at the ant swarm. The social organization of antbirds that form mixed foraging flocks, unassociated with army ants, is quite different. The main species involved belong to different species from the army ant followers. In the flocks studied by Munn, in Peru, the permanent, core members belonged to 6 species – 2 (larger) species of *Thamnomanes*; and 4 (smaller) species, 3 of *Myrmotherula* and one of *Philydor*. Furthermore, each species was represented in each flock by an adult pair with their dependent offspring (if any), and the flock territory was defended jointly by all flock members. Munn's study showed that flock territories and composition remained remarkably stable over 2 years. It seems possible that over large tracts of Amazonia the population of these core species is regulated and kept uniform one with another by the permanent structure of their foraging flocks. It also seems likely that mutual warning against predators (the small forest hawks of the genera *Accipiter* and *Micrastur*) is the most important function of these flocks.

By comparison, the foraging flocks of tanagers, flycatchers, furnariids and other birds that move through the higher strata of the forest have remained little studied. It will be of great interest to compare these flocks, which are so much more difficult to observe and follow, with the mixed flocks at lower levels, and to compare all of them with the mixed feeding flocks of other continents, consisting as they do almost entirely of birds of different families.

Co-evolution of birds with other organisms

More or less specialised co-adapted relationships between birds and plants are perhaps more prevalent in tropical America than elsewhere. Two kinds of relationship are of prime importance: between fruit-eating birds and the fruits that they eat, and between nectarivorous birds and the flowers that they exploit.

Co-evolution between specialised frugivorous birds and the fruits that they eat has involved a few main plant families, especially the Lauraceae (laurels), the Palmae (palms) and Burseraceae (incense family). Trees belonging to these families bear highly nutritious fruits which can provide a complete, or almost complete, diet for specialised frugivorous birds such as toucans and cotingas. Specialised frugivores are reliable dispersal agents, as they depend on the fruits of particular kinds of tree. The tree invests a relatively large amount of its resources in each fruit, in the form of fats, proteins and carbohydrates, the high investment being the price that it pays for the services of reliable dispersal agents. Proof of these ideas is hard to obtain, but Howe &

Primack (1975) have shown, in a detailed study of seed dispersal from one tree, that the dispersal of its seeds to suitable habitats is more likely to result from the behaviour characteristic of specialised frugivores than from that of unspecialised opportunist frugivores.

Fruits adapted for dispersal by unspecialised frugivores belong to many different families, the 2 most important being the Melastomataceae and Rubiaceae. Plants bearing such fruits invest little of their resources in any one fruit; they mainly produce small succulent fruits (containing mainly sugars and little fat or protein), their strategy being to attract as many opportunist fruit-eaters as possible. The ramifications of these and other more subtle interactions between plants and frugivorous birds are only just beginning to be appreciated, and most of the research so far has been confined to tropical America (e.g. McKey 1975, Morton 1973, Howe & Estabrook 1977).

A large and fast-growing literature deals with the co-evolutionary interactions between nectarivorous birds and the flowers that they exploit. A great impetus to such research has come from the fact that the amount of energy offered by the flower (in the form of simple sugars), its rate of production, and the efficiency with which hummingbirds can exploit it are all measurable in the field under favourable conditions, while laboratory measurements are available for the metabolic rate of hummingbirds under various conditions. The results of this research cannot possibly be summarised in a few lines, and it may only be mentioned that a broad division has been established between 2 fundamentally different foraging strategies for hummingbirds: territoriality and "trap-lining". Territorial species are generally small to medium-sized hummingbirds with short, straight bills, which exploit small unspecialised flowers which are densely enough clumped to provide a defendable resource. Trap-liners are generally larger species with long, often curved bills, which exploit large flowers with long corolla tubes to which their bills are adapted. Such flowers are usually too sparse to provide a defendable resource, so that the trap-liner (as its name implies) has to move round a large circuit in order to fulfil its needs. The most recent research has shown that not only bill size and shape but also aerodynamic features (wing disc loading) are involved in adaptation for either the territorial or the trap-lining way of life (Feinsinger & Chaplin 1975, Feinsinger *et al.* 1979).

A quite different kind of co-adapted relationship, involving the association of nesting birds (several species of icterids and tyrant-flycatchers) with stinging or biting Hymenoptera, has been described by Smith (1968, 1979). Smith has shown that both partners in the association gain an advantage, the birds getting protection both from nest-predators and from bot-flies whose larvae attack the nestlings, and the insects getting protection against certain birds and mammals which specialise in eating their larvae. There is a further surprising complication in the case of those icterids that are parasitised by the cowbird *Scaphidura*. Nestling *Scaphidura* are very efficient at removing and eating bot-fly larvae from themselves and from other nestlings in the nest with them. Nests which are not protected by a wasps' nest thus benefit from being parasitised by the cowbird; but only if they contain a single young cowbird. If there are 2 or more young cowbirds in the nest they usually out-compete the host chicks for food, negating the advantage that they confer by ridding them of bot-fly larvae.

The tendency of certain birds to nest close to nests of stinging and biting Hymenoptera has been known for a long time. Smith's study, of which the above is a simplified summary, is the first to reveal the extraordinarily complex nature of such relationships.

Literature, and the amateur contribution

Nearly all the research to date on tropical American birds has come from professional ornithologists. There is no parallel to the amateur contribution that has made African birds so much better known than tropical American birds. For any amateur ornithologist visiting the region, the lack of adequate reference books has until recently been a major handicap. With the publication during the last few years of a number of excellent field guides and handbooks the situation is changing, and it may well be that significant additions to knowledge of Neotropical birds will begin to come from expatriates temporarily resident in little known areas and from amateur ornithologists making short visits with particular objectives. It is probably fair to say that short-term visitors making more or less casual lists of species observed are unlikely to add very much, as the avifauna of the more accessible areas is too well known for such records to be very significant. This is by no means true, however, of nesting, feeding habits, and other aspects of the biology of even the most common species.

For the visitor to any part of tropical South America, Meyer de Schauensee (1970) is of the greatest value, and indispensable for anyone visiting a country that has not yet got its own handbook. There are still only a few countries that have up-to-date handbooks or field-guides: Colombia (Meyer de Schauensee 1964, now out of print), Venezuela (Meyer de Schauensee & Phelps 1978), Guyana (Snyder 1966), Surinam (Haverschmidt 1968), and – zoogeographically part of South America – Trinidad and Tobago (ffrench 1973).

Central America is now well covered by up-to-date field-guides. The excellent book by Peterson & Chalif (1973) covers not only the birds of Mexico but all species found in Guatemala, British Honduras (Belize) and El Salvador. Most of the species in Ridgely (1976) extend west of Panama to Costa Rica and beyond. Thus Peterson & Chalif and Ridgely together include the great majority of Central American birds. The only field-guide that covers all Central American species is that by Davis (1972); but this work needs to be used with caution, as it contains many idiosyncrasies including much unorthodox taxonomy and nomenclature (see review by Parkes 1973).

Finally mention should be made of a major new work of reference by Emmet R. Blake, *Manual of Neotropical Birds,* to be completed in 4 volumes, of which the first has already appeared (Blake 1977). When complete, this will to a large extent replace the *Catalogue of Birds of the Americas* for the student of Neotropical birds, and for the foreseeable future will remain the standard work on the distribution, description and taxonomy of Neotropical birds. It does not include data on ecology or behaviour, but gives references to the main publications that are available on the life history of each species.

References:

Blake, E. R. 1977. *Manual of Neotropical Birds*. Vol. 1. Chicago and London: University of Chicago Press.

Davis, L. I. 1972. *A Field Guide to the Birds of Mexico and Central America.* Austin: University of Texas Press.

Feinsinger, P. & Chaplin, S. B. 1975. On the relationship between wing disc loading and foraging strategy in hummingbirds. *Am. Nat.* 109: 217–224.

Feinsinger, P., Colwell, R. K., Terborgh, J. & Chaplin, S. B. 1979. Elevation and the morphology, flight energetics, and foraging ecology of tropical hummingbirds. *Am. Nat.* 113: 481–497.

ffrench, R. 1973. *A Guide to the Birds of Trinidad and Tobago.* Wynnewood, Pa.: Livingston Publishing Co.

Haffer, J. 1970. Art-Entstehung bei einigen Waldvögeln Amazoniens. *J. Orn.* 111: 285–331.

— 1974. *Avian speciation in tropical South America.* Publ. Nuttall Orn. Club, No. 14.

Haverschmidt, F. 1968. *Birds of Surinam.* Edinburgh and London: Oliver & Boyd.

Howe, H. F. & Estabrook, G. F. 1977. On intraspecific competition for avian dispersers in tropical trees. *Am. Nat.* 111: 817–832.

Howe, H. F. & Primack, R. B. 1975. Differential seed dispersal by birds of the tree *Casearia nitida* (Flacourtiaceae). *Biotropica* 7: 278–283.

Mayr, E. 1957. New species of birds described from 1941 to 1955. *J. Orn.* 98: 22–35.

— 1964. Inferences concerning the Tertiary American bird faunas. *Proc. Nat. Acad. Sci.* 51: 280–288.

— 1971. New species of birds described from 1956 to 1965. *J. Orn.* 112: 302–316.

— & Phelps, W. H. 1967. The origin of the bird fauna of the south Venezuelan highlands. *Bull. Am. Mus. Nat. Hist.* 136: 275–327.

McKey, D. 1975. The ecology of coevolved dispersal systems. pp. 159–191 *in* Gilbert & Raven (eds.), *Coevolution of Animals and Plants.* Austin: University of Texas Press.

Meyer de Schauensee, R. 1964. *The Birds of Colombia.* Wynnewood, Pa.: Livingston Publishing Co.

— 1970. *A Guide to the Birds of South America.* Wynnewood, Pa.: Livingston Publishing Co.

— & Phelps, W. H. 1978. *A Guide to the Birds of Venezuela.* Princeton: Princeton University Press.

Morton, E. S. 1973. On the evolutionary advantages and disadvantages of fruit eating in tropical birds. *Am. Nat.* 107: 8–22.

Munn, C. 1979. The ecology of mixed-species foraging flocks in passerines. M.Sc. thesis, Oxford University.

O'Neill, J. P. & Graves, G. R. 1977. A new genus and species of owl (Aves: Strigidae) from Peru. *Auk* 94: 409–416.

Parkes, K. C. 1973. (review.) *Auk* 90: 211–216.

Peterson, R. T. & Chalif, E. L. 1973. *A Field Guide to Mexican Birds.* Boston: Houghton Mifflin Co.

Ridgely, R. S. 1976. *A Guide to the Birds of Panama.* Princeton: Princeton University Press.

Short, L. L. 1975. A zoogeographic analysis of the South American chaco avifauna. *Bull. Am. Mus. Nat. Hist.* 154: 167–352.

Sick, H. 1954. Zur Biologie des amazonischen Schirmvogels, *Cephalopterus ornatus. J. Orn.* 95: 233–244.

— 1968. Vogelwanderungen im kontinentalen Südamerika. *Vogelwarte* 24: 217–243.

Simpson, B. B. & Haffer, J. 1978. Speciation patterns in the Amazonian forest biota. *Ann. Rev. Ecol. Syst.* 9: 497–518.

Smith, N. G. 1968. The advantage of being parasitized. *Nature* 219: 690–694.

— 1979. Some evolutionary, ecological, and behavioral correlates of communal nesting by birds with wasps or bees. *Proc. XVII Int. Orn. Congr.,* in press.

Snow, D. W. 1962a. A field study of the Black and White Manakin, *Manacus manacus,* in Trinidad. *Zoologica* 47: 65–104.

— 1962b. A field study of the Golden-headed Manakin, *Pipra erythrocephala,* in Trinidad, W.I. *Zoologica* 47: 183–198.

— & Lill, A. 1974. Longevity records for some neotropical land birds. *Condor* 76: 262–267.

— & Snow, B. K. 1963. Breeding and the annual cycle in three Trinidad thrushes. *Wilson Bull.* 75: 27–41.

— & Snow, B. K. 1973. The breeding of the Hairy Hermit *Glaucis hirsuta* in Trinidad. *Ardea* 61: 106–122.

Snyder, D. E. 1966. *The Birds of Guyana.* Salem, Mass.: Peabody Museum.

Vuilleumier, F. 1969a. Systematics and evolution in *Diglossa* (Aves, Coerebidae). *Am. Mus. Novit.* 2381.
— 1969b. Pleistocene speciation in birds living in the High Andes. *Nature* 223: 1179–1180.
Willis, E. O. 1967. The behavior of Bicolored Antbirds. *Univ. Calif. Publ. Zool.* 79: 1–127.
— 1972. The behavior of Spotted Antbirds. *Orn. Monogr. (A.O.U.)* 10.
— 1973. The behavior of Ocellated Antbirds. *Smithson. Contr. Zool.* 144.
— 1974. Populations and local extinctions of birds on Barro Colorado Island, Panama. *Ecol. Monogr.* 44: 153–169.

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BOOKS RECEIVED

Kale, Herbert W. (Editor). 1979. *Rare and Endangered Biota of Florida. Vol. 2. Birds.* Pp. 121. Black-and-white photographs. Soft covers. University Presses of Florida. 7 dollars.

A glossy, illustrated account of the status of birds in Florida whose populations are endangered, threatened, rare or of special concern, with well composed sections for each species on range, habitat, life history and ecology, basis of classification, recommendations for conservation and distribution maps. A comprehensive and most informative review.

The seven hundred and twenty fourth Meeting of the Club was held in the Senior Common Room, South Side, Imperial College, London, S.W.7 on Tuesday, 15 January 1980 at 7 p.m. The attendance was 24 Members and 10 guests.

Members present were: P. HOGG (*Chairman*), Major N. A. G. H. BEAL, D. R. CALDER, R. A. N. CROUCHER, O. J. H. DAVIES, Professor J. H. ELGOOD, D. J. FISHER, R. M. FRAGA, A. GIBBS, M. E. K. GORE, C. F. MANN, Rev. G. K. MCCULLOCH, C. J. MEAD, Dr J. F. MONK, J. G. PARKER, R. E. F. PEAL, P. S. REDMAN, S. A. H. STATHAM, Mrs S. VERE TAYLOR, K. V. THOMPSON, J. F. WALSH, C. E. WHEELER, C. R. WOOD and J. B. WOOD.

Guests present were: Dr. C. J. Bibby (speaker), Dr. R. A. Cheke, C. L. Hodgetts, G. P. McCulloch, Mrs. I. McCulloch, R. J. G. Macy, Dr. Amicia Melland, Miss E. V. Pilcher, Dr. K. W. Smith and Mrs. E. J. Wood.

Dr. C. J. Bibby spoke on "Ecological aspects of migration". He discussed why some birds should be territorial on migration, instancing Reed Warblers *Acrocephalus scirpaceus* and Sedge Warblers *A. schoenobaenus,* the former being territorial in Iberia on autumn migration but not the latter. These species are superficially similar but have different feeding behaviours.

The seven hundred and twenty fifth Meeting of the Club was held in the Senior Common Room, South Side, Imperial College, London, S.W.7 on Tuesday, 4 March 1980 at 7 p.m. The attendance was 18 Members and 8 guests.

Members present were: Dr. J. F. MONK (*Chairman*), Dr. C. H. FRY (speaker), P. J. BELMAN, K. F. BETTON, Mrs. DIANA BRADLEY, R. D. CHANCELLOR, Professor J. H. ELGOOD, M. E. J. GORE, B. GRAY, D. GRIFFIN, C. F. MANN, J. A. PARKER, R. E. F. PEAL, R. C. PRICE, S. A. H. STATHAM, K. V. THOMPSON, J. F. WALSH and C. R. WOOD.

Guests present were: Miss M. Barry, J. A. Button, Dr. R. A. Cheke, Dr. Judith Coles, S. J. W. Coles, Miss H. Fisher, Mrs. R. E. F. Peal and C. Watts.

Dr. C. H. Fry spoke on "Kingfishers" and kindly supplied the following summary:—

Analysis of affinities among the 87 kingfisher species suggests that they arose in the region from northern Australasia (Daceloninae) to south-east Asia (Alcedininae), whence they have repeatedly invaded the Palaearctic, the Afrotropics, the New World (spawning the Cerylinae) and the Pacific. They provide an excellent illustration of adaptive radiation, and from original lives as deep-forest sit-and-wait insectivores they have specialized variously as predators of small vertebrates in open country, of snails, crabs, earthworms, flying insects, small aquatic mammals and ultimately of fish. The most effective fishers are the few species which plunge-dive from hovering flight, a technique which has evolved in all three subfamilies. The family also demonstrates: polyphyletic toe-loss; neoteny; and the evolution of congeneric sympatry by way of size change. (See *The Living Bird,* Nineteenth Annual 1980.)

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BULLETIN

OF THE

BRITISH ORNITHOLOGISTS' CLUB.

No. I.

The Inaugural Meeting took place at the Mona Hotel, Henrietta Street, Covent Garden, on Wednesday, October 5th, 1892.

Chairman: P. L. Sclater, F.R.S.

The following Members of the British Ornithologists' Union were also present:—E. Bidwell, W. T. Blanford, F.R.S., Philip Crowley, W. Graham, W. R. Ogilvie Grant, T. J. Monk, F. Penrose, Count T. Salvadori, Howard Saunders, W. L. Sclater, Henry Seebohm, R. Bowdler Sharpe, H. T. Wharton, and John Young.

Guests: Mr. E. Degen, Mr. W. P. Pycraft, Mr. Oldfield Thomas, Mr. A. Smith Woodward.

The Rules of the Club were proposed and adopted. A Committee was appointed, consisting of Mr. E. Bidwell, the Earl of Gainsborough, and Mr. H. Seebohm, with the Editor of 'The Ibis.' Mr. Howard Saunders was elected Secretary and Treasurer to the Club.

It was determined to hold a Meeting on the third Wednesday in every month from October to June inclusive. An abstract of the proceedings to be printed as soon as possible after each Meeting, under the title of the *Bulletin of the British Ornithologists' Club,* and distributed gratis to every Member. Copies of this monthly 'Bulletin' will be published by *Mr. R. H. Porter,* 18 *Princes Street, Cavendish Square, W.*

Dr. R. Bowdler Sharpe was appointed Editor of the 'Bulletin.'

Reproduced from the menu of the

BRITISH ORNITHOLOGISTS' CLUB
and
BRITISH ORNITHOLOGISTS' UNION

Combined Dinner 8 March 1939

L. R. Brightwell

Agenda of the 416th Meeting of the Club held
on 8 March 1939 after the Dinner:—

Mons. L. LIPPENS: *Lantern Slides of West African Birds*
Miss C. LONGFIELD: *Film of African Wild Life*
Dr. J. BERRY: *Lantern Slides of British Wild Geese*
Mr. R. ATKINSON: *Lantern Slides of the Griffon Vulture in Spain*

A Film of the Courtship Display of the Great Bustard lent by
Dr. HORST SIEWERT

ISSN 0007 - 1595

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Bulletin of the

British Ornithologists' Club

Edited by

Dr. J. F. MONK

Volume 100 No. 2 June 1980

FORTHCOMING MEETINGS

Tuesday, 8 July 1980 at the Senior Common Room, South Side, Imperial College, Princes Gardens, S.W.7 at 6.30 p.m. for 7 p.m. Mr. Richard Porter on *Raptor migration in Europe and the Middle East*. Those wishing to attend should send their acceptances with a cheque for £4.60 a person to the Hon. Secretary at 2 Chestnut Lane, Sevenoaks, Kent TN13 3AR (telephone Sevenoaks (0732) 50313) to arrive not later than first post on Thursday, 3 July 1980.

Tuesday, 16 September 1980 at the same venue at 6.30 p.m. for 7 p.m. Mr. J. A. Hancock on his recent Expedition to the Chaco and Corrientes in N. Argentina. Mr. Hancock was senior author of "*The Herons of the World*" (1978) and the area visited has little-known and interesting heron species. Those wishing to attend should send their acceptance with a cheque for £4.75 a person to the Hon. Secretary (address above) to arrive not later than first post on Thursday, 11 September 1980.

Gifts or offers for sale of unwanted back numbers of the *Bulletin* are very welcome

COMMITTEE

D. R. Calder (*Chairman*)
R. E. F. Peal (*Hon. Secretary*)
Dr. J. F. Monk (*Editor*)
J. G. Parker
R. A. N. Croucher
B. Gray (*Vice-Chairman*)
Mrs. D. M. Bradley (*Hon. Treasurer*)
R. D. Chancellor
C. F. Mann

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Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 100 No. 2 Published: 20 June 1980

REPORT OF THE COMMITTEE FOR 1979

Hon. Secretary's report

Inflation at a high rate yet again posed serious problems for the Club and printing costs were raised 20% in May. Subscription rates for both Members and non-member *Bulletin* Subscribers had been raised to take effect last year, so it is pleasant to report that numbers of both rose during the year; it is also gratifying that there were larger attendances at the Meetings.

Seven Meetings were held, those in January, March, April, May, September and November being in the Senior Common Room, South Side, Imperial College and the one in July at the Goat Tavern. Dinner at Imperial College was £3.80 in January rising to £4.30 in November; for the Goat Tavern £3.15. The increased proportion held at Imperial College has been due to numbers becoming too large for the Goat and to the excellent catering and accommodation at Imperial College. Attendances at Meetings totalled 243, the most since 1964 (when there were 9 Meetings), and the 50 present in March (speaker the late Mr. J. D. England) the highest number at a Meeting for over 15 years.

Forty-seven new Members joined, resignations numbered 16 and 13 Members were struck off under Rule (4). The Committee deeply regrets to report the deaths of Dr. D. A. Bannerman, O.B.E., M.A., Sc.D., Ll.D., F.R.S.E. (Member 1910–1978, Editor 1914–1915, Hon. Secretary and Treasurer 1918–1919, Chairman 1932–1935, Vice-Chairman 1939–1940), Mr. C. S. Barlow (Member 1957–1979), Mrs. G. M. Chadwick-Healey (Member 1947–1979), Dr. F. Gudmundsson (Member 1947–1979) and Baron Charles M. G. de Worms, Ph.D., F.R.I.C. (Member 1924–1979). Dr. Bannerman, best known of today's Members for his many excellent books on ornithology, is the only person to have held all the elected offices in the Club: an obituary has already appeared in *Ibis* (121: 520–522). Charles de Worms, known affectionately among Members as 'The Baron', came to Meetings frequently throughout his 55 years in the Club and almost certainly came to more than any other Member in the history of the Club. The Committee also much regret to report that Miss I. Phyllis Barclay-Smith, C.B.E., a well-known and popular Member who joined in 1933, suffered a stroke on 25 December last and died 8 days later.

At the end of the year there were 309 paid-up Members and 146 non-member *Bulletin* Subscribers, increases on a year before of 8 and 5 respectively. Plans have been made for 1980 with a special centennial *Bulletin* number and for 8 Meetings, which the Committee hopes will also enjoy good support. An increased *Bulletin* circulation is important to enable the size of the *Bulletin* to be maintained without heavy rises in charges and it is hoped that Members will do their best to recruit new Members and Subscribers.

Income and Expenditure Account for the year ended 31st December, 1979

	1979		1978	
INCOME	£	£	£	£
Subscriptions				
Members' Subscriptions	1,874		993	
Subscribers	1,173		667	
		3,047		1,660
Income Tax Recovered				
Deeds of Covenant	187		102	
Other	16		17	
		203		119
Investment and Deposit Income				
General Fund	397		142	
Trust Fund	20		41	
		417		183
Rent—*Less* Expenses				
Property 'Clovelly', Tring		431		391
Sales of *Bulletin*—Back Numbers		857		553
Authors' Costs		205		—
Donations		348		49
		5,508		2,955
EXPENDITURE				
Cost of Printing Back Numbers	664		—	
Cost of Publication of *Bulletin*	2,722		2,528	
Distribution Costs	786		214	
Notices of Meeting	64		61	
Audit and Accountancy	50		40	
Meeting Expenses	26		6	
Miscellaneous Expenditure and Postage	236		167	
Treasurer's Expenses	95		151	
Projector Depreciation	10		10	
		4,653		3,177
Excess of Income over Expenditure		£855		£(222)

We have prepared the attached Balance Sheet and Income and Expenditure Account from the books, vouchers and information presented to us and certify that they are in accordance therewith.

29A Bridge Street,
Pinner, Middlesex 8 April 1980

Searle Inskip Freed & Co.
Chartered Accountants

Balance Sheet as at 31st December, 1979

	1979		1978	
General Fund	£	£	£	£
Balance at 31st December 1978	1,514		1,736	
Add: Excess of Income over Expenditure	855		(222)	
		2,369		1,514
Bulletin Fund				
Royal Society	400		—	
British Ornithologists' Union	150		—	
Members' Donations	110		110	
		660		110
Trust Fund				
F. J. F. Barrington Legacy	1,000		1,000	
Less: Loss on Sale of War Stock	555		555	
		445		445
		£3,474		£2,069
Represented by:—				
Fixed Assets				
Projecion and Screen—Cost	100		100	
Less: Depreciation	90		80	
		10		20
Current Assets				
Stock of *Bulletin*—Nominal Value	1		1	
Cash at Bank	2,945		908	
National Savings Bank	2,596		2,357	
Tax Repayment Due	187		—	
	5,729		3,266	
Less: Current Liabilities				
Creditors	1,407		643	
Subscriptions Paid in Advance	790		1,099	
Rent Paid in Advance	593		—	
	2,790		1,742	
		2,939		1,524
General Fund Investments				
£100 8½% Treasury Loan 1980/82 (M.V. £85)	100		100	
Less: Reserve	20		20	
		80		80
Trust Fund Investments				
£880 5½% Treasury Stock 2008/12 (Market Value £440)		445		445
		£3,474		£2,069

Editor's report

Volume 99 of the *Bulletin* contained 156+xxi pages. Delays from receipt of papers to publication remained at 6–10 months. There were 45 main papers varying from 1 to 9 pages, averaging about 3 pages, and 10 'In Brief' notes, besides notice of 5 books received and the Club notes. Authorships of the 55 papers were British (at home or abroad—23), American (11), Argentine (1), Australian (4), Belgian (2), Brazilian (1), West German (3), South African (4), Swedish (1) and Taiwan (1). There was the usual welcome spread of subjects covering a broad spectrum of the world's avifauna in taxonomy and field studies. Several back numbers of the *Bulletin* have been reprinted so that there is now a complete stock from Volume 49.

Hon. Treasurer's report

High interest rates and judicious transfers between current and deposit accounts have increased the Club's investment income. Thus the Club's finances appear to be in a satisfactory state, with an excess of income over expenditure of £855. A rise in the number of covenants made by Members has more than compensated for a lower rate of tax recoverable. Sale of back numbers shows a small income on balance despite the costs of reprinting. The figures for subscriptions include arrears collected last year. However the current year will undoubtedly see increasing printing costs, and postage rates have risen twice within the last several months.

Mr. D. R. Calder, Mr. P. J. Oliver and Mr. J. G. Parker have been appointed trustees of the Barrington Trust in place of Lloyds Bank Ltd., who are resigning.

ANNUAL GENERAL MEETING

The Annual General Meeting following the eighty-eighth year of the British Ornithologists' Club was held at Imperial College, London, S.W.7, on Tuesday, 13 May 1980 at 6 p.m. with Mr. P. Hogg in the Chair. Nine Members were present.

The Minutes of the Annual General Meeting held on 15 May 1979 (*Bull. Brit. Orn. Cl.* 99: 41) were approved and signed by the Chairman.

The Report of the Committee and Accounts for 1979 were presented by the Hon. Secretary and Hon. Treasurer. After a brief discussion it was proposed by the Hon. Secretary and seconded by Mr. J. H. Elgood that they be received and adopted and this was carried unanimously. On matters related to the *Bulletin*, Mr. Elgood remarked on the outstanding interest of Vol. 100 No. 1.

The Chairman reported that Dr. G. Beven had regretfully stated that he must withdraw his willingness to serve as Chairman owing to the state of his health. In view of this, the Chairman had nominated and the Hon. Secretary had seconded, in accordance with Rule (1), Mr. D. R. Calder for election as Chairman and Mr. B. Gray for election as Vice-Chairman. The following elections were then made unanimously:—

Chairman: Mr. D. R. Calder (*vice* Mr. P. Hogg, who retired on completion of his term of office).

Vice-Chairman: Mr. B. Gray (*vice* Dr. G. Beven, who retired on completion of his term of office).

There being no nominations additional to those of the Committee in respect of the following, they were declared elected as follows:—

Editor: Dr. J. F. Monk (re-elected).

Hon. Treasurer: Mrs. D. M. Bradley (re-elected).

Hon. Secretary: Mr. R. E. F. Peal (re-elected).

Committee: Mr. R. A. N. Croucher (*vice* Mr. B. Gray, who retired by rotation).

The Hon. Secretary proposed and the Editor seconded a vote of thanks to the Chairman for the kind, firm way in which he had presided over the Club for the last three years and this was carried unanimously.

The Meeting closed at 6.12 p.m.

The seven hundred and twenty sixth Meeting of the Club was held in the Senior Common Room, South Side, Imperial College, London, S.W.7 on Tuesday 15 April 1980 at 6.45 p.m. to mark the 100th Volume of the *Bulletin*. The attendance was 39 Members and 32 guests.

Members present were: P. HOGG (*Chairman*), J. K. ADAMS, Major N. A. G. H. BEAL, P. J. BELMAN, J. H. R. BOSWALL, Mrs. DIANA BRADLEY, J. A. BURTON, D. R. CALDER, T. J. CHRISTMAS, G. S. COWLES, The Earl of CRANBROOK, R. A. N. CROUCHER, O. J. H. DAVIES, Dr. J. A. DICK, Professor J. H. ELGOOD, Sir HUGH ELLIOTT, A. GIBBS, Miss C. E. GODMAN, B. GRAY, D. GRIFFIN, Mrs. B. P. HALL, E. D. H. JOHNSON, I. G. MANKLOW, C. F. MANN, Rev. G. K. McCULLOCH, Dr. J. F. MONK, P. J. OLIVER, P. J. S. OLNEY, J. G. PARKER, R. C. PRICE, M. J. REDMAN, P. S. REDMAN, P. J. SELLAR, Dr. D. W. SNOW, S. A. H. STATHAM, K. V. THOMPSON, A. VITTERY, M. P. WALTERS, C. E. WHEELER.

Guests present were: F. B. S. ANTRAM, Miss M. BARRY, D. BRADLEY, Dr. J. D. BRADLEY, Mrs. J. M. CALDER, E. CAWKELL, W. J. A. DICK, P. FALK, R. FENTON, Mrs. B. M. GIBBS, R. GILLMOR, N. HACKING, Mrs. P. HOGG, A. M. HUTSON, Dr. Janet KEAR (Editor of *Ibis*), Professor R. D. KEYNES, G. P. McCULLOCH, Mrs. I. M. McCULLOCH, M. McQUEEN, Dr. Amicia MELLAND, D. MILNE, Mrs. J. F. MONK, M. R. M. MONK, Dr. R. J. O'CONNOR (Director, B.T.O.), Miss E. V. PILCHER, I. PRESTT (Director, R.S.P.B.), D. B. SHIRT, Mrs. Barbara K. SNOW, S. SNOW, C. STACK, Mrs. B. VITTERY, K. E. WILTSHER, (Manager, Caxton & Holmesdale Press).

Mr. J. H. R. Boswall, the Earl of Cranbrook, Mr. R. Gillmor, Dr. Janet Kear, Dr. R. J. O'Connor, Mr. I. Prestt, Dr. D. W. Snow and Mr. K. E. Wiltsher were specially invited as guests of the Club.

The Chairman spoke and proposed the toast of The Guests. The Rt. Hon. the Earl of Cranbrook, Ph.D., Editor of *Ibis* 1973–1980, replied and proposed the toast of *The Bulletin*, to which the Editor responded. The text of the Earl of Cranbrook's speech is printed below (at page 137).

Dr. D. W. Snow, Head of the Sub-Department of Ornithology, British Museum (Natural History), then gave an illustrated talk on his recent visit to southeastern Brazil, the main purpose of which was to make arrangements for a survey of the endangered avifauna of the coastal forests. It is hoped that this survey will be a B.O.U. – sponsored research project and will be supported by the World Wildlife Fund. He described three forest areas in the states of Sao Paulo, Rio de Janeiro and Espirito Santo, each with a different avifauna including many endemics. The highlight was a series of observations of the very rare curassow *Crax blumenbachii*, including the finding (by a forest warden) of a nest with eggs, in the only area of the forest where this large gamebird is thought to survive.

Mr. J. H. R. Boswall, B.B.C., then introduced two films which he had directed, "Wildlife Safari to Mexico, Sea of Cortez" and "Wildlife Safari to Thailand, Temple Storks".

The Meeting closed at about 10.30 p.m.

The seven hundred and twenty-seventh Meeting of the Club was held in the Senior Common Room, South Side, Imperial College, London, S.W.7 on Tuesday, 13 May 1980 at 7 p.m. The attendance was 28 Members and 18 guests.

Members present were: D. R. CALDER (*Chairman*), P. J. BELMAN, K. F. BETTON, Mrs. Diana BRADLEY, Dr. L. H. BROWN, R. D. CHANCELLOR, P. J. CONDER, O. J. H. DAVIES, J. H. ELGOOD, A. GIBBS, B. GRAY, D. GRIFFIN, P. HOGG, A. J. HOLCOMBE, I. G. MANKLOW, C. F. MANN, C. J. MEAD, Mrs. U. V. MEAD, Dr. J. F. MONK, P. J. OLIVER, J. G. PARKER, R. E. F. PEAL, P. J. SELLAR, Prof. G. H. N. SETON-WATSON, S. A. H. STATHAM, J. F. WALSH, C. E. WHEELER and C. R. WOOD.

Guests present were: Miss M. BARRY, D. BRADLEY, Miss S. W. CONDER, Mr. and Mrs. H. CULLINHAM, Mr. and Mrs. N. CURTIS, Mrs. J. H. ELGOOD, Mrs. B. M. GIBBS, Mrs. U. HODGINS, Mrs. J. M. HOGG, Dr. C. IMBODEN, Mr. and Mrs. G. R. C. LUMSDEN, Mrs. R. E. F. PEAL, Mrs. G. H. N. SETON-WATSON and Mr. and Mrs. B. WORTHINGTON.

Dr. L. H. Brown, O.B.E., gave an address on Flamingos and Pelicans on the Rift Valley lakes in Kenya. He explained the unforseen results of the introduction of the fish *Tilapia grahami* to Lake Nakuru from Lake Magadi by the health authorities to control mosquitos, following the declaration of the former as a nature park. He dealt particularly with Great White Pelicans *Pelecanus onocrotalus*, Greater Flamingos *Phoenicopterus ruber* and Lesser Flamingos *Phoenicoparrus minor* and illustrated his address with fine colour slides.

Reflections of an ex-editor

by Earl of Cranbrook
(retiring Editor of the *Ibis*).

Adapted from a speech in reply to the toast of 'The Guests' at the meeting held to commemorate the 100th volume of the *Bulletin of the British Ornithologists' Club*.

In the 121 years of its existence, there have been only 15 Editors of the *Ibis*. Some incumbents have shown great endurance. Besides the 40 years (alone or jointly) of P. L. Sclater, the 28 of W. L. Sclater or 14 of R. E. Moreau, my 7 years in office rank as a trivial contribution. Modesty should inhibit me from public utterance of opinions formed during so comparatively brief a term. Yet the invitation to respond to your Chairman's toast on this historic occasion, coupled with the urging of your Editor (who is also among my predecessors) to drag out my reply 'for quite 15 minutes or more', prompt me to discuss views on matters relating to the publication, funding, preparation and editing of ornithological research papers.

Publication

The promulgation of results or conclusions is an integral step in the scientific process. Although the spoken word is useful for an initial presentation, this medium is too transitory and too limited in its audience to suffice as a sole record. Publication in a book or journal is the accepted proper culmination of an episode of scientific research. Modern electronic devices may change the means of storage, transmission or retrieval, but print on paper is likely to remain the most convenient and durable form of record for ordinary purposes.

It follows that every research project—even if comparatively trivial—should be designed to end with the preparation of a written report. In ornithology (especially field ornithology, in which the doing is the fun) this goal can recede once the active phase of accumulation of data is over. It is common experience that adherence to deadlines is very difficult under the most favourable circumstances. All too often the demands of a developing career involve new, unrelated research objectives. More mundane but no less pressing social or professional obligations can intrude. Nonetheless, any ornithologist who, for instance, accepts a grant or participates in an expedition thereby incurs an obligation to prepare and submit a report in a form fit for publication. Conversely, those who administer grants or plan expeditions must make adequate provision, in time and in funds, to allow participants to fulfil this obligation. Although these two complementary aspects may seem self-evident, both are not always given sufficient consideration.

Funding

In ornithology, as generally in the biological sciences in U.K., there exists a wide option of specialist outlets for research papers. The periodicals have remarkably diverse administrative and financial backgrounds. Some are wholly commercial ventures, some the productions of research institutes operating under forms of charitable trust, others the journals of societies or associations that may be national, regional or local, or devoted to restricted taxonomic groups of birds. In the publication of *Ibis*, the B.O.U. has entered into an agreement with Academic Press. This arrangement is similar to those made by other biological journals. I suspect that the widespread formation of associations of this nature between publishing firms and learned societies has been a vitalising factor in post-war scientific publication.

There is of course no British national ornithological institute to match the ornithological sections of the national academies of science that exist in many other countries, nor is there a state-supported national ornithological journal. Yet in ornithology, as in other branches of biology, much (if not most) research nowadays is funded by government, either directly at research institutes (I.T.E., B.A.S., etc.) or the British Museum (Natural History), or indirectly by grant (through N.E.R.C., etc.). Government research institutes do produce publications, but these are devoted chiefly or exclusively to 'house' research. For their papers the staff of these institutes also seek other outlets, including the *Ibis.*

When the costs of the national research effort are largely supported by government, I find it anomalous that the expenses of the publication of results in the leading British ornithological journal should be borne by the 1800 or so subscribing members of B.O.U. in their joint venture with Academic Press. In order to test the opportunities to vary this feature of accepted practice, a little more than 3 years ago (following a B.O.U. Council decision) a couple of sentences were added at the foot of the 'Notice to contributors'. These words were printed in italics to give prominence to their message:

> *Authors whose grant-support includes provision for the costs of publication are requested to notify the Editor of this fact. Any such funds offered will be used to increase the numbers of pages in the* Ibis, *and for no other purpose.* (1977, *Ibis* 119, no. 1).

To date no author, as far as I recollect, has spontaneously informed the Editor that such funds are available. After prompting, several authors have provided all or part of the actual costs of printing their papers. Only one such contributor was based in the U.K. As he knows, it is not from disrespect for his gesture that I mention that he could only pay for one-third of a page. The *Ibis* will not falter and certainly will never fail for lack of these funds. Yet it seems a ripe moment to ask when grant-seekers and grant-givers in our own country will turn their attention to this subject.

Preparation

The obligation of the ornithologist, as a scientist, to publish the results of his research ought not be translated into precipitance. In the popular image, influenced by literature such as *The Double Helix* (Watson 1968), the scientist is driven by the urge to be first in an intense, even bitter, professional race. In interpretative ornithology, ideas may (and perhaps do) arise at the same time in different minds with genuine intellectual independence. Field or experimental ornithology, on the other hand, contains a sufficiently strong descriptive component to prevent complete overlap between genuinely independent projects. No doubt it is wise to ensure, as far as possible, that a prospective study is not already engaging another ornithologist. Yet even when the reports of two separate investigations of the same topic were submitted to me nearly simultaneously, it was still possible to recognise differences in content and to publish both on adjacent pages (Burtt 1975, Hodges 1975). Undue haste to obtain pre-emptive publication is probably often not in the best interests of science and certainly very rarely propitious in human relations.

Very early in my editorial term, a referee advised me that a certain submission had already been published in almost identical form in a local natural history bulletin. In accordance with the clear statement on this matter in the 'Notice to contributors', I refused the paper. For this I was chided by a senior supporter of the author, who claimed that by withholding the opportunity to publish (re-publish in this case) in the *Ibis* I was damaging a young man's professional prospects. On similar grounds, on other occasions, other correspondents have asked for concessionary treatment for themselves or their protegés. It is worrying to be told (sometimes at length, on the telephone, once from as far as Texas) that a career is in jeopardy, but this cannot be a factor to influence editorial decisions.

It is also rather widely believed that a professional biologist is esteemed and his promotion facilitated more by the number of his published papers than by their content. If proof is needed, this contention is supported (a little unfairly) by the evident tendency for the output of older, established ornithologists to become increasingly repetitive. Again, I was once rebuked by my most constant self-appointed critic for including a paper, by one such figure, that contained only a small nugget of originality couched in a voluminous recapitulation of earlier published work. In this case, the original submission had in fact suffered massive editorial excisions and, in consideration of all circumstances, I felt that my decision was right. I am sure that the ornithologist should plan to publish his work in an organised fashion, through a carefully selected variety of outlets. But the author who aims for quantity through replication will certainly provoke irritation among editors and, in the end, forfeit the respect of his colleagues.

Sir Peter Medawar (1979, p. 63) felt 'disloyal but dauntingly truthful in saying that most scientists do *not* know how to write'. This opinion has been held for many years, both by literary men and by scientists of eminence (Galton 1908). With the great proliferation of scientific output in recent decades, the activity of advising writers has itself shown reflected growth. A selection of publications concerned only with the English language includes those of the Royal Society (1950), Conference of Biological Editors (1960), Hawkins (1967), Sanford (1967, 1968), Council of Biology Editors (1972), O'Connor & Woodford (1975) and the International Steering Committee of Medical Editors (1979).

The *Ibis* seeks to report new ornithology from all parts of the globe and to attract readers and contributors from the international field. Authors whose mother-tongue is not English should not be deterred and, in practice, are not. All past Editors have presumably been as willing as myself to undertake wholesale revision and rewriting in such cases. Between American and British usage of our common language there are small divergencies in spelling of which we, as the minority, cannot expect our Transatlantic homoglots to be aware. There tend also to be less acceptable differences in style and convention, particularly in the use of jargon, which again require sympathetic but sometimes wholesale revision. My chief animadversion is towards authors from universities or research institutes who fail to take advantage of the comparative wealth of constructive, practical advice on the procedures of scientific writing and publication now available through the services of any library. The amateur can be excused many solecisms, but the student or qualified professional should approach the composition of his written work with as much care and rigour as he does the preceding stages of his research programme.

At first experience, the formal structure of a scientific paper may strike the tyro as unduly restrictive. The traditional literary qualities—variety, vividness of expression, lightness of touch, deft verbal devices, etc.—are rarely compatible with the standardised progression of topics and the unremitting requirements of precision and conciseness in a scientific paper. The beginner needs instruction and practise in the writing of reports. I urge lecturers, supervisors or heads of research departments to ensure that those for whom they have responsibility are given the opportunity to learn before they make their first submission to an editor. There may even be some among the instructors, too, who could profitably consult the references listed above. In more than one British institution, in my opinion, the introduction of a short course on scientific writing would be of equal benefit to staff and students.

Editing

Although I have complained (above) that in this country the national funding of research does not extend to the support of specialist periodicals such as the *Ibis*, this situation may not be without benefit. Editorial policy is beholden only to the Council and membership of B.O.U., and is independent of external pressure. To this extent, British ornithologists are in control of their own publication medium.

At present, any supplementary funds received from authors are used to meet the costs of extra pages, in excess of the annual total stipulated in the agreement with Academic Press. A more significant income from this source might permit, among other things, the recruitment of a full-time salaried editor. Yet, again, at present the Editor, receiving merely a small honorarium that for years has been wholly incommensurate with the work involved, is the servant only of his conscience (subject to election or re-election for a 4-year term). This freedom is a welcome element in the present system.

The editor draws upon the specialist assistance of referees in assessing the technical competence of a submission. There is no fixed panel of referees and, given the very wide scope of material acceptable for publication ('the entire field of ornithology', interpreted in practice as anything involving birds), it would probably be difficult to select a small group of persons with sufficiently wide expertise. Choice of referees has been a matter of judgement, taking into account factors including availability (many ornithologists manage to spend a lot of time abroad and incommunicado), research interests, willingness, astuteness and thoroughness.

In many instances, even the most percipient and assiduous referee can only give a qualified recommendation. Excepting papers that are so brilliant or so abysmal that the process of referal is largely redundant, the final judgement must still lie with the editor. Only he can assess a submission in the context of others already received, accepted or awaiting publication. It is his responsibility to impose an acceptable degree of uniformity in style and presentation that contributes to the recognised qualities of his journal. It is his function to encourage an interchange, involving the author(s), himself and the referee, if necessary, that will achieve a compromise acceptable to all interests. It is not always easy, but if successful the editor plays a useful part in this, the final stage of the research project. I am happy to say that I have received many more thanks than curses in the process, and these have contributed towards the satisfaction of editing *Ibis.*

I thank the librarians of the Linnean Society and Zoological Society of London for the selection and loan of certain literature cited in this paper.

References:

Burtt, E. H., Jr. 1975. Cliff-facing interaction between parent and chick Kittiwakes *Rissa tridactyla* in Newfoundland. *Ibis* 117: 241–242.

Conference of Biological Editors. 1960. *Style Manual for Biological Journals.* Washington, D.C.: American Institute of Biological Sciences.

Council of Biology Editors. 1972. *CBE Style Manual* (3rd edn.). Washington, D.C.: American Institute of Biological Sciences.

Galton, F. 1908. Suggestions for improving the literary style of scientific memoirs. *Trans. R. Soc. Lit.* 28(2), 17 pp.

Hawkins, C. H. 1967. *Speaking and Writing in Medicine.* Springfield, Illinois: Thomas.

Hodges, A. F. 1975. The orientation of adult Kittiwakes *Rissa tridactyla* at the nest site in Northumberland. *Ibis* 117: 235–240.

International Steering Committee of Medical Editors. 1979. Uniform requirements for manuscripts submitted to biomedical journals. *Med. Lab. Sci.* 36: 319–328.

Medawar, P. B. 1979. *Advice to a Young Scientist.* New York: Harper & Row.

O'Connor, M. & Woodford, F. P. 1975. *Writing Scientific Papers in English.* Amsterdam: Elsevier.

Royal Society. 1950 (2nd revised edition, 1965). *General Notes on the Preparation of Scientific Papers.* London: Royal Society.

Sanford, F. B. 1967. *Organizing the Research Report to Reveal the Units of Research.* U.S. Dept. Interior, Fish & Wildlife Service, circ. 272.

Sanford, F. B. 1968. *Organizing the Technical Article.* U.S Dept. Interior, Fish & Wildlife Service, circ. 269.

Watson, J. D. 1968. *The Double Helix.* London: Weidenfeld & Nicolson.

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The type locality of *Rheinartia ocellata nigrescens* Rothschild

by G. W. H. Davison

Received 8 September 1979

The Peninsular Malaysian subspecies of the Crested Argus *Rheinartia ocellata nigrescens* was described by Rothschild (1902) from 2 male and 1 female specimens taken by J. Waterstradt's Dayak collectors. In the original description the type locality was given as "the eastern Malay Peninsula, at Ulu Pahang", that is, an imprecisely defined region around the headwaters of the Pahang river.

Robinson (1906) reported that "the three original specimens . . . were secured, according to information obtained by me, by Mr. Waterstradt's native hunters on the Ulu Dong, a river [which] takes its rise on Gunong Benom". The way in which this information was obtained was not given. Robinson's statement seems to have been the basis for quoting Ulu Dong, or Sungei Ulu Dong, as the type locality by Beebe (1922), Gibson-Hill (1949) and Medway (1972). There are no specimens specifically from the mountain Gunung Benom in the American Museum of Natural History, British Museum (Natural History) or the University of Singapore (the former Raffles Museum collection). Four of Waterstradt's specimens from the Rothschild collection, including the lectotype (AMNH 544050) and 2 paralectotypes, are in the American Museum of Natural History, all bearing the locality Ulu Pahang and dates from October 1901 to January 1902. Two more, again from Ulu Pahang and dated January 1902, are in the British Museum (Natural History).

Gunung Benom is a rounded granite mountain with broad ridges and no very steep faces, isolated from montane forest on the Main Range to the west by 27km and from Gunung Tahan to the northeast by 62km. Gunung Tahan and its outlier Gunung Rabong, where calls were heard and feathers collected in 1972 (Wells 1975) and birds seen in 1976 (Davison 1978), are both steep sandstone mountains with scattered granitic intrusions and knife-edge ridges. On Gunung Rabong the birds' calls are so loud and frequent that one cannot spend a day in the 700–1000 m altitude region without hearing them. Since 1977 I have climbed Gunung Benom fully or in part by 3 routes: in September 1977 by the northeast ridge on the same route as Medway (1972); in February 1978 up the banks of the Ulu Dong on the northwest; and in May 1979 to the stone pinnacle of Batu Gambar Orang on a southeast ridge. On none of these trips did I find any evidence of *R. o. nigrescens,* although this was the main target in each case and although 7 other phasianid species were seen or heard.

Robinson's restriction of the type locality to Ulu Dong led to the inclusion of Gunung Benom in this bird's range by later authors (Robinson & Chasen 1936, Gibson-Hill 1949, Delacour 1951, Medway & Wells 1976). Although Ulu Pahang is not a precisely defined area, Gunung Benom clearly does not lie within it, whereas Gunung Tahan may be considered to do so. Waterstradt collected birds on Tahan from May till at least November 1901 (Hartert 1902), overlapping the dates when the type series was obtained, and Hartert, who mentioned these specimens, specifically stated that he was reporting on birds collected on that mountain. There is no river Dong on Gunung Tahan, but a river Gedong drains a subsidiary peak near the present ascent route from the southeast (Directorate of National Mapping, Malaysia, Series L7010, sheet 58).

My visits suggest that this bird does not occur anywhere round the flanks of Gunung Benom. Specimens, sightings and clear descriptions exist only from Tahan and Rabong, and I consider that it is only found on that sandstone massif, which simplifies the picture of its distribution and ecological requirements. I therefore reject Robinson's restriction of the type locality, and restrict it instead to the middle slopes of Gunung Tahan, northern Pahang in the Malay Peninsula.

Acknowledgments: I thank Dr. D. R. Wells for frequent discussions, Dr. K. C. Searle for participating in one climb, and Mr. I. C. J. Galbraith and Dr. J. Farrand Jr. for information on specimens at Tring and New York. This work was performed during tenure of a Commonwealth Scholarship and a grant from the New York Zoological Society.

References:
Beebe, W. 1922. *A Monograph of the Pheasants.* Vol. 4. Witherby: London.
Davison, G. W. H. 1978. Studies of the Crested Argus, II. Gunung Rabong 1976. *World Pheasant Association Journal* 3: 46–53.
Delacour, J. 1951. *The Pheasants of the World.* Country Life: London.
Gibson-Hill, C. A. 1949. An annotated checklist of the birds of Malaya. *Bull. Raffles Mus.* 20: 1–299.
Hartert, E. 1902. On birds from Pahang, eastern Malay Peninsula. *Nov. Zool.* 9: 537–580.
Medway (Lord). 1972. The Gunong Benom expedition 1967: 6. The distribution and altitudinal zonation of birds and mammals on Gunong Benom. *Bull. Brit. Mus. Nat. Hist.* (Zool.) 23: 103–154.
Medway (Lord) & Wells, D. R. 1976. *The Birds of the Malay Peninsula.* Vol. 5. Witherby: London.
Robinson, H. C. 1906. A synopsis of the birds at present known to inhabit the Malay Peninsula south of the Isthmus of Kra. Part 2. The Gallinaceous birds. *J. Fed. Malay St. Mus.* 1: 124–132.
Robinson, H. C. & Chasen, F. N. 1936. *The Birds of the Malay Peninsula.* Vol. 3. Witherby: London.
Rothschild, W. 1902. Untitled remarks, in *Bull. Brit. Orn. Cl.* 12: 55–56.
Wells, D. R. 1975. Bird Report: 1972 and 1973. *Malay. Nat. J.* 28: 186–213.

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A new subspecies of the Spiny-cheeked Honeyeater *Acanthagenys rufogularis*, with notes on generic relationships

by Kenneth C. Parkes

Received 8 August 1979

According to Storr (1973: 128), the Spiny-cheeked Honeyeater *Acanthagenys rufogularis* ranges north in Queensland, Australia, to the mouth of the Norman River and the Georgetown district, both at the base of the Cape York Peninsula. There appear to be no records of the species from the Peninsula itself.

In a small collection of Queensland birds taken by the Denton brothers in 1883, purchased by Carnegie Museum of Natural History from Shelley W. Denton in 1911, is a single specimen of this honeyeater from Friday Island, one of a group of small islands in Torres Strait, between Cape York and New Guinea. This represents a major range extension for this species, enough to make one suspect an error in labelling. However, the bird bears the original label in the collector's handwriting, and, even more importantly, the specimen is completely outside the range of variation of 101 specimens, from all over Australia, examined in the American Museum of Natural History. I believe the specimen represents a previously unknown, distinctive, isolated population. Survey of those museums known to hold collections from the islands in Torres Strait failed to turn up any additional specimens of Spiny-cheeked Honeyeater, but the distinctiveness of the unique Carnegie specimen prompts me to provide it with a name. Salomonsen (1967) considered the species monotypic, synonymizing no fewer than 8 names (6 authored by Mathews). I have made no attempt to assay the validity of any of these synonymized subspecies, as specimens were available at the American Museum of Natural History from the entire known range of the species, and the Friday Island bird matched none of them.

For the Friday Island bird I propose the name:

Acanthagenys rufogularis parkeri subsp. nov.

Holotype: Adult male? (query by collector), Carnegie Museum of Natural History No. 35755, collected on Friday Island, Torres Strait, northern Queensland, Australia, 13 June 1883, by Shelley W. Denton.

Diagnosis: Differs from any specimen in a series of 101 from throughout Australia in having the entire upperparts washed with grey-green. A few other specimens *approach* this colour, especially on the mid-back, but in none except the Friday Island bird does it extend onto the crown. The light patch formed by the broad edgings of rump feathers and upper tail coverts is more extensive than in most other specimens, and differs from all in being washed with greenish yellow. The underparts posterior to the cinnamon-rufous throat and upper breast are also heavily washed with yellow; the intensity of this colour is approached by a few specimens and equalled by one, from the opposite end of the species' range (AMNH 696546, adult ♀, Peron, Shark Bay, Western Australia), which would represent *A. r. flavacanthus* (Campbell) if that race were recognizeable. The Shark Bay specimen is the greenest-backed mainland specimen examined, but lacks this colour on the crown and is less yellow on the rump than *parkeri*.

Measurements of holotype: Wing (flattened), 115 mm; tail, 114+ mm. (worn); exposed culmen, 20.2 mm; bill from anterior corner of nostril, 11.7 mm; tarsus, 16.5 mm.

Range: Known only from the holotype from Friday Island, a major northward range extension for the species.

Etymology: This distinctive subspecies is named for Shane Parker of the South Australian Museum, an untiring student of the systematics and nomenclature of Australian birds.

Remarks: The unique holotype is in rather worn plumage. When freshly moulted, it must have been even more strikingly greenish and yellowish in colour.

Generic relationships: The name *Acanthagenys rufogularis,* new genus and species, was published twice by Gould in 1838. Salomonsen (1967) spelled the generic name correctly in his citation to Gould on p. 445, but incorrectly as "*Acanthogenys*" in his generic synonymy on p. 444. Gould himself later adopted the spelling "*Acanthogenys,*" but the original spelling must be used according to the provisions of Article 32 (a) of the International Code of Zoological Nomenclature. Salomonsen synonymized Gould's genus with *Anthochaera* Vigors & Horsfield, 1827. This treatment has been adopted in most of the subsequent literature of Australian birds. Schodde (1975), however, has advocated restoration of *Acanthagenys,* stating that "It is just as close to New Guinean *Melidectes* (e.g. *M. torquatus*) in pattern and colouring of plumage, has vocalizations distinct from both and has different cream-buff umber-spotted eggs; it may be an independent derivative of the *Melidectes*-group". Later, in discussing relationships among meliphagid genera, Schodde (p. 20) states: "One line proceeds from *Melidectes* and *Pycnopygius* to *Anthochaera, Meliarchus* and *Philemon,* to *Acanthagenys* and *Xanthomyza,* to *Entomyzon* and *Manorina,* and ultimately to *Meliphaga, Lichenostomus* and *Melithreptes*". I find some of this sequence far-fetched, but do not propose to discuss it, and quote it only because this is the only place that Schodde mentions the non-Australian genus *Meliarchus,* to which I shall return.

I agree with Schodde that *rufogularis* is out of place in the genus *Anthochaera.* Unfortunately Salomonsen never published a rationale for his classification of the Meliphagidae in the "Peters" *Check-list of Birds of the World* (1967). One can find similarities and differences scattered throughout the genera of medium-sized to large honeyeaters, and it is difficult to assess the relative importance of these, much less to set up any "primitive" and "derived" polarities for most external characters. For example, facial wattles are common in the Meliphagidae, and, indeed, the members of the genus *Anthochaera* are collectively known as "wattlebirds". The Spiny-cheeked Honeyeater differs from 2 of the 3 species of *Anthochaera* in lacking a facial wattle. However, *Anthochaera chrysoptera* also lacks a wattle. This is likely to be a secondary loss, but who is to say whether the ancestors of the unwattled *Acanthagenys* had wattles? Other than being about the same size (instead of substantially larger, as are the other 2 species), *Anthochaera chrysoptera* bears no special resemblance to *Acanthagenys rufogularis.*

Similarly, I see no particular close resemblance (*contra* Schodde) between *Melidectes torquatus* and *Acanthagenys rufogularis* other than the fact that *torquatus,* unlike most of its genus, has some cinnamon-rufous in its plumage; however, this colour is *not* on the throat and upper breast as in *rufogularis,* but on the lower breast, bordered anteriorly by a heavy black transverse breast band without counterpart in *rufogularis.* The latter species also lacks the extensive black areas of the head and elsewhere found in many *Melidectes* (including *torquatus*), and those species of *Melidectes* without extensive black bear no special resemblance to *rufogularis.* No *Melidectes* has the dark longitudinal ventral streaks of *rufogularis* – the ventral markings of *torquatus* (which are quite different from the underparts of other *Melidectes*) are heavy spots tending toward a transverse, not longitudinal, alignment.

In spite of its present geographic isolation, the San Cristobal Honeyeater *Meliarchus sclateri,* now confined to the island of San Cristobal in the Solomons, must obviously be derived from some honeyeater of the Australia-New Guinea region, and I cannot help but think that it is the closest living relative of *Acanthagenys rufogularis,* even though Salomonsen separated these 2 by no fewer than 12 genera. The major structural difference between *Meliarchus* and *Acanthagenys* lies in the much stronger legs and feet of the former, but the number of resemblances is striking. Although the bill of *Meliarchus* is also longer, part of the difference is illusory, as the base of the mandible is naked, whereas in *Acanthagenys* the feathering extends forward to the nostrils. Mayr (1932) gave as one of the generic characters of *Meliarchus* "base of maxilla bare, BUT A NARROW TRACT OF SHORT BRISTLY FEATHERS CONNECTING NOSTRILS AND LORES" (emphasis Mayr's). These bristles are in fact present in both *Acanthagenys* and *Anthochaera* (and probably other genera not compared); the difference is simply that *Meliarchus* has all but completely lost the short pennaceous feathers that, in the other genera, accompany the bristles (which themselves have tufts at their bases) in the area between the lores and the nostrils. The tuft-based bristles are simply more conspicuous in *Meliarchus* because of their isolation.

Mayr also characterized *Meliarchus* as having a "graduated" tail. This is an exaggeration, as only the outermost pair of rectrices is significantly shortened (86% of central rectrices). The relatively *un*graduated tail is, in fact, one of the characters in which *Meliarchus* and *Acanthagenys* differ collectively from *Anthochaera*. In *Meliarchus* the second outermost pair of rectrices is 96% as long as the central pair; in *Acanthagenys* this ratio is 97%, but in the strongly graduated tail of *Anthochaera carunculata* it is only 78% (the other 2 species of *Anthochaera* were not measured but have obviously strongly graduated tails). The tail of *Meliarchus* differs from that of *Acanthagenys* in colour rather than in shape, being reddish brown rather than blackish, and lacking terminal white spots.

To return to the bills, those of both *Acanthagenys* and *Meliarchus* are laterally compressed for most of their length, flaring out along the lower margins of the nostrils. The bill of *Anthochaera* is much rounder in cross-section, and does not flare into a shelf along the lower rim of the nostrils. The bills of *Anthochaera* are black (*carunculata, paradoxa*) or dark brown (*chrysoptera*). That of *Acanthagenys rufogularis* is bicoloured, being "fleshy-pink at base with black tip" (above bill colours taken from Officer 1971). The bill of *Meliarchus sclateri* is described by Mayr as having the "base of upper mandible pale green, tip pale olive, under mandible straw yellow". The iris of *Anthochaera paradoxa* is described by Officer as brown, and those of *A. chrysoptera* and *A. carunculata* as bright chestnut. That of *Acanthagenys* is described as blue, while Mayr states that the iris of *Meliarchus* is "dirty white", surely closer to blue than to brown or chestnut.

It is in the general pattern of the plumage other than the tail, however, that resemblances between *Acanthagenys* and *Meliarchus* are particularly striking. In both species the dorsal feathers have dark greyish-brown centres and paler edges (variable in colour in *Acanthagenys* and rather dark greyish-green in *Meliarchus,* resulting in less obvious contrast in the latter). Both have unmarked throats bordered by black moustache stripes (the throat itself yellowish-white in *Meliarchus,* cinnamon-rufous in *Acanthagenys*). Both have yellowish-white underparts posterior to the throat and upper breast, streaked longitudinally with fuscous. The streaks of these two species are comprised of feathers having dark centres and pale edges, whereas the ventral feathers of *Anthochaera* sp. are the reverse – whitish feathers with brown edges. *Meliarchus* has whitish streaks on the lower cheeks, impinging on the black moustache stripe, precisely where *Acanthagenys* adults have the white or yellowish spiny feathers that give the genus its name.

Without knowing more about both species in life, I do not propose to merge *Meliarchus* Salvadori, 1880, in *Acanthagenys* Gould, 1838. The major morphological difference between the 2 that is visible in museum skins is the much stronger legs and feet of *Meliarchus*. I would not maintain a genus based solely on the difference in feathering at the base of the bill, but this can be used as a supplementary character. In any case, however, I have little doubt that these 2 species are each other's closest living relative, and should certainly be placed together in any sequence of Meliphagidae.

Acknowledgments: I am indebted to Shane Parker for his help in determining the significance of the Queensland specimens in the Denton collection, and for having called my attention to some pertinent references; and to Ian Galbraith of the British Museum (Natural History), A. R. McEvey of the National Museum of Victoria, Raymond A. Paynter, Jr. of the Museum of Comparative Zoology, George E. Watson of the U.S. National Museum of Natural History, Laurence C. Binford of the California Academy of Sciences, and Mary LeCroy of the American Museum of Natural History, for assistance in locating Denton and/or Torres Straits specimens and checking for the presence of *Acanthagenys*. Facilities of the American Museum of Natural History were used through the courtesy of Wesley E. Lanyon.

References:

Gould, J. 1838 (April). *A Synopsis of the Birds of Australia and the Adjacent Islands*. Part 4. Published by the author: London.

Gould J. 1838 (December). (Characters of a large number of new species of Australian birds) *Proc. Zool. Soc.* for 1837: 138–157.

Mayr, E. 1932. Notes on Meliphagidae from Polynesia and the Solomon Islands. *Amer. Mus. Novit.* no. 516.

Officer, H. R. 1971. *Australian Honeyeaters*. Third printing, amended. Bird Observer's Club: Melbourne.

Salomonsen, F. 1967. Family Meliphagidae, in *Check-list of Birds of the World,* Vol. 12, ed. by R. A. Paynter, Jr. Mus. Comp. Zool: Cambridge, Mass.

Schodde, R. 1975. *Interim List of Australian Songbirds. Passerines*. Roy. Austr. Ornith. Union: Melbourne.

Storr, G. M. 1973. *List of Queensland Birds*. Spec. Publs. West. Aust. Mus. No. 5: Perth.

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The type locality and taxonomy of *Anisognathus flavinucha somptuosus*

by Thomas S. Schulenberg and Manuel A. Plenge

Received 6 July 1979

The populations of the Blue-winged Mountain-Tanager *Anisognathus flavinucha* occurring from southeastern Ecuador south to central Peru represent the subspecies *somptuosus*, described by Lesson (1831). Chapman (1925) commented on minor differences between specimens from northern and central Peru, but considered his entire series to be referable to *somptuosus*. Later Chapman (1926) wrote that the northern population 'possibly . . . is separable'. Hellmayr (1936) could not detect the differences noted by Chapman. Both Zimmer (1944) and Parkes (in Storer 1970) felt that the northern birds were separable. However, the naming of a new form had to be delayed until it was known to which group the type of *somptuosus* belonged.

Lesson (1831) did not indicate a type locality when he described *Tachyphonus somptuosus* (=*Anisognathus flavinucha somptuosus*), but Hellmayr (1913, 1936) reported that it had been collected in Peru by Ajassou, about whom Zimmer (1944) was evidently unfamiliar when he discussed the taxonomy of *somptuosus*. Later, however, Zimmer (1953) in synonymising *Pica luteola* Lesson 1831 with *Cyanocorax yncas yncas* (Boddaert) restricted its type locality to Cajamarquilla, Department of Pasco, Peru, the designation of the type locality being based on information which Berlioz supplied to Zimmer. Berlioz, at Zimmer's request, had examined a specimen in the Paris Museum which was said by Pucheran (1853) to be the type of *Pica luteola*, and according to Zimmer (1944) Berlioz found that the specimen Pucheran had referred to was presented to the Museum by Ajassou and bore the locality 'Caxamarquilla' (=Cajamarquilla).

Gerardo Lamas M. (pers. comm.) and Father Jaroslav Soukup (pers. comm.) kindly checked their files on collectors in Peru of butterflies and plants, respectively, but Ajassou is not cited; therefore, except for the locality mentioned above, nothing is known about him. It could well be that he was not a collector at all, but a traveller who had the opportunity to obtain some specimens. Vaurie (1972) places Cajamarquilla, with 'Ajasson' as collector, in the Department of Junin, probably the result of an oversight, since Zimmer (1953) had earlier located Cajamarquilla in the Department of Pasco. We can assume that Ajassou travelled in central Peru and collected at Cajamarquilla, Province and Department of Pasco, Peru, which becomes the type locality of *somptuosus*.

With the type locality of *somptuosus* thus designated, the northern population would now be available for description. We have come to the conclusion, however, that there is no justification for the subdivision of *somptuosus*. The supposed distinctive features of the northern form, compared to the population in central Peru, are (1) a slightly larger crown patch; (2) a deeper tone to the yellow underparts (Chapman 1925, 1926, Zimmer 1944); and (3) brighter, less greenish-blue margins to the retrices and, to a lesser extent, remiges (Zimmer 1944). The difference in the colour of the rectrices and remiges exhibits only a weak pattern of geographic variation. Although the extremes in blue margination are found in some specimens from northern Peru (Cajamarca; Amazonas) and the specimens with the greenest margination are from the south (Junín; Ayacucho), a series from any single locality in the range of *somptuosus* shows considerable variation. In fact, in several cases in which a locality is represented by only a single specimen, the specimen exhibits the 'wrong' colour to the marginations, even if the specimen comes from a locality which is far removed from any area of potential intergradation between north and central Peruvian populations. The difference in the colour of the rectrix and remige margination appears at best to represent a weak trend with so many exceptions that this character cannot be used to differentiate populations.

The relative size of the crown patch is an equally unreliable differential character. Although the crown patch is slightly larger in specimens from northern localities, the difference is slight and there are exceptions. Also, we have been unable to recognise the supposed deeper colour of the underparts of the northern birds. No size differences are apparent between any populations.

Aside from the slight differences in these characters and the weak clinal variation they exhibit, there are still other reasons for questioning the validity of a proposed northern subspecies. The populations of northern Venezuela, *A. f. venezuelanus* (Hellmayr 1913) are very similar to *somptuosus*, *venezuelanus* being best separated by the greener, less brownish olive rump, though individual specimens of the two subspecies can in fact be matched. We feel that little can be gained by adding yet another marginally-definable taxon to what is already a complicated situation.

In addition to examining the entire series at the American Museum of Natural History that Zimmer worked with (see Zimmer 1944 for a list of localities), we compared Peruvian specimens at the Louisiana State University Museum of Zoology from the following Departments: Cajamarca (2 males), Amazonas (2 males), San Martín (1 female), Huánuco (4 males, 4 females), Huánuco-Loreto (1 male, 1 female) and Ayacucho (2 males, 2 sex undetermined). The four Ayacucho specimens are from Huanhuachayo (12° 44′S, 73° 47′W) and represent the southernmost published record for the subspecies.

Acknowledgements: Mary Le Croy at the American Museum of Natural History checked Zimmer's hand-written notes for us. John P. O'Neill, J. V. Remsen, Jr., Gary R. Graves and Morris D. Williams read the manuscript or assisted us in other ways. We gratefully acknowledge a grant from the Frank M. Chapman Memorial Fund to Schulenberg in 1979. We also thank the personnel of the Dirección General Fauna y de Flora of the Peruvian Ministerio de Agricultura under whose auspices the Louisiana State University fieldwork has been carried out.

References:
Chapman, F. M. 1925. Descriptions of new birds from Colombia, Ecuador, Peru, and Argentina. *Amer. Mus. Novit.* 160: 1–14.
— 1926. The distribution of bird-life in Ecuador: A contribution to a study of the origin of Andean bird-life. *Bull. Amer. Mus. Nat. Hist.* 55: xiii+784.
Hellmayr, C. E. 1913. Beschreibung von zwei neven neotropischen Tangaren. *Verh. Orn. Ges. Bay.* 11: 317–319.
— 1936. Catalogue of birds of the Americas and the adjacent islands . . . *Field Mus. Nat. Hist., Zool. Ser.* 13, Part IX: 1–458.
Lesson, R. P. 1831. *Traite d'ornithologie, ou description des oiseaux reunis dans les principaies collection de France.* F. G. Levrault: Paris.
Pucheran, –. 1853. Etudes sur les types peu connus de Musée de Paris, par le Docteur Pucheran. *Rev. Mag. Zool.* (2) 5: 545–550.
Storer, R. W. 1970. Thraupinae in *Check-list of Birds of the World* (R. A. Paynter, Jr., Ed.) 14: xiv+443. Cambridge: Massachusetts.
Vaurie, C. 1972. An ornithological gazeteer of Peru (based on information compiled by J. T. Zimmer). *Amer. Mus. Novit.* 2491: 1–36.
Zimmer, J. T. 1944. Studies of Peruvian birds. No. XLVIII. The genera *Iridosornis, Delothraupis, Anisognathus, Buthraupis, Compsocoma, Dubusia,* and *Thraupis. Amer. Mus. Novit.* 1262: 1–21.
— 1953. Studies of Peruvian birds. No. 65. The jays (Corvidae) and pipits (Motacillidae). *Amer. Nus. Novit.* 1609: 1–20.

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Relationship of white facial feathering to age and locality in Peruvian *Cinnycerthia peruana*

by G. R. Graves

Received 17 September 1979

In a recent paper, Gochfeld (1979) draws attention to the intra-population variation in facial feathering in the Sepia-brown Wren *Cinnycerthia peruana*. He considered the presence of a buffy white forecrown patch in Peruvian populations as "intra-racial variation" and that as yet there was "no evidence on whether white feathering might be age related". Examination of Peruvian specimens of the Sepia-brown Wren in the Louisiana State University Museum of Zoology (LSUMZ) and personal field observations in Peru suggest that white facial markings are both age related and geographically distinctive.

Further analysis, detailed below, of the LSUMZ data in Gochfeld's Table 1 and additional material collected in 1978 reveals that birds in juvenal and first basic plumages lack white facial feathering regardless of geographic locality. Wrens from northern Peru, south to central Dpto. Amazonas and northern Dpto. San Martin, never show white facial feathering regardless of age. However, breeding adults of the central Peruvian populations from southern Dpto. Amazonas (33 km northeast of Ingenio) on the west slope of the eastern Andes south through Dpto. Huanuco to Dpto. Ayacucho, exhibit white forecrowns, chin and orbital areas.

ANALYSIS OF LSUMZ SPECIMENS BY LOCALITIES

1. San Jose de Lourdes, 2200 m, Dpto. Cajamarca. A series of 9 specimens (7 ad., 2 imm.) including a family group has no white facial feathering.
2. Cordillera Colan, 2400 m, Dpto. Amazonas. Recently collected specimens (10 ad., 1 imm.) lack the extensive white facial feathering of central Peruvian forms. One specimen (LSUMZ 88567, skull ossified) has a few white feathers in the eye ring, perhaps evidence of introgression with southerly "white-headed" forms.
3. 10 km NE Abra Patricia, 1950 m, Dpto. San Martin. 8 specimens (6 ad., 2 imm.) show no sign of white facial feathering.
4. 33 km NE Ingenio, 2200 m, Dpto. Amazonas. 5 specimens (2 ad., 3 imm.) closely resemble the large series from Huanuco. 2 adults with ossified skulls, but pale lower mandible have white feathers around the eyes and one female (LSUMZ 82125) has incoming white feathers intermixed with brown on forecrown.
5. Cordillera Carpish (including Huaylaspampa), Dpto. Huanuco. The large series (28 ad., 12 imm.) provides fairly conclusive evidence of age relatedness of white facial feathering. 12 immatures distinguished by immature gonads, unossified skulls, pale lower mandibles and greyish crowns lacked white feathering. Non-breeding adults (13), often with some juvenal characteristics, and usually with unenlarged gonads, lack white facial feathering. Breeding adults (15) with dark bills, fully ossified skulls and enlarged gonads develop white feathers around the eyes and subsequently on the forecrown, chin and orbital region.
6. Yuraccyacu (12° 45′ S, 73° 48′ W), 2600 m, Dpto. Ayacucho. A small series (3 ad., 2 imm.) resemble the Huanuco population (white facial feathering in adults).

In Peru, Sepia-brown Wrens are commonly encountered in groups that seem to be families composed of a breeding pair, 1–3 subadults apparently from the previous brood, and several juveniles (pers. ob.). Subadults may serve as nest helpers until they establish their own territories. Perhaps a progressive development of white head markings creates several phenotype classes that function in social signalling. Additional long term field studies are needed to resolve the many questions posed by this interesting species.

I thank J. V. Remsen for helpful comments.

References:

Gochfeld, M. 1979. Nest description and plumage variation of the Sepia-brown Wren *Cinnycerthia peruana. Bull. Brit. Orn. Cl.* 99(2): 45–47.

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Post-mortem changes in measurements of grebes

by Jon Fjeldså

Received 1 October 1979

The study of geographical variation in birds is mainly based on skins in museums, a domain of specialists. Others measure live birds, notably at ringing stations, for example to determine the provenance of migrant birds. Mensural differences between populations may be very small, so sources of error have to be minimized, and this has led to critical discussion of the way in which to take measurements. (Compare the classical standards, Baldwin *et al.* (1931) and Witherby *et al.* (1938–41) with recent contributions like Kehm (1970) and Svensson (1972).) However, it is rarely that consideration is given to whether measurements of live birds are comparable with racially diagnostic measurements based on skins.

It is documented that wing-length varies with the humidity of the feathers (Evans 1964) and with changes soon after death (Bröchel 1973). Since there is connective tissue in joints and around feather follicles, the wing-length shrinks after skinning (see e.g. Svensson 1975). Vepsäläinen (1968), for instance, found a 2% shrinkage in the wings of 11 *Vanellus vanellus*. Yet, very few students of geographical variation have made corrections for this shrinkage, and post mortem changes in other measurements have received very little attention (see Greenwood 1979 for review).

During a study of geographical variation of *Podiceps auritus* (Fjeldså 1973), and of character displacement in Andean grebes (Fjeldså 1980, ms), I found that all the usual measurements changed with time. To permit pooling of measurements of museum skins with specimens found dead but not worth preserving, all dimensions from skins needed correction for shrinkage. The results of a detailed study of post mortem changes in the weeks after death are presented here.

Materials and methods

15 *Podiceps auritus arcticus,* collected in Norway 1971 and in Iceland 1969, were measured fresh and again after 4–9 weeks; 6 Danish oil casualties of *P. grisegena grisegena* were measured dead (several weeks old, frozen most of the time) and at 1, 4, 9, and 18 weeks after skinning; grebes collected Oct 1977 – Jan 1978 in Peru, comprising 7 *Rollandia* (*Centropelma*) *microptera,* 12 R. *rolland chilensis* and 16 R. *rolland morrisoni,* 6 *P. occipitalis juninensis* from Junín and 9 others of a longer-billed population from Puno, and 7 *P. taczanowskii,* were measured fresh, again in mid Oct 1978 and at end of Mar 1979.

All the birds were measured by the author as follows: the wings were flattened on a ruler without straightening the primaries or digital joints (following Svensson 1972); the tarsus and straightened middle toe with claw were measured with sliding calipers (following Baldwin *et al.* 1931); the outer and inner toes of *P. auritus* were measured; the exposed culmen (chord) was measured with sliding calipers; depth and width of the closed bill on a level with the mid-dorsal feather edge were taken with sliding calipers.

Tables 1 and 2 show the average post mortem changes, expressed as the factor by which "dry" measurements must be multiplied in order to obtain the "fresh" measurement. Table 1 shows variation in correction factors according to time after skinning, Table 2 differences between species.

Table 1

Correction factors for post mortem changes in measurements of skinned grebes (Podicipedidae), relative to time after skinning. Values are the factor by which the measurement of a skinned specimen should be multiplied to get the fresh measurement.

	Time after skinning, weeks							
	1	4	9	18	39	42–51	59–63	67–72
	Podiceps griseigena	*Podiceps auritus and P. grisegena*	*P. aur:* *P. gris:*	*P. gris:*	*Rollandia rolland* *Rollandia microptera* *Podiceps occipitalis* *Podiceps taczanowskii*	*R. roll:* *R. micr:* *P. occ:* *P. tcz:*	*R. roll:* *R. micr:* *P. occ:* *P. tcz:*	*R roll:* *R. micr:* *P. occ:* *P. tcz:*
n=	6	17	10	6	16	37	23	30
			Correction factors					
wing		1.008	1.020	?	1.029	1.030	1.028	1.029
tarsus		1.004	1.006	?	0.004	1.005	1.003	1.005
toe middle		1.028	1.005	?	1.034	1.026	1.033	1.027
culmen exposed	1.007	1.014	1.011	1.011	1.037	1.039	1.038	1.039
bill depth	1.042	1.042	1.052	1.054	1.108	1.087	1.105	1.084
bill breadth	1.066	1 035	1.051	1.075	1.163	1.129	1.160	1 131

Table 2

Correction factors for post mortem changes in grebes (Podicipedidae). The first figure in each column is the mean dimension (mm, fresh specimens), followed by the correction factor by which the measurement taken on a skin must be multiplied to get the fresh measurement. The value is the mean for the measurements taken Oct 1978 and Mar 1979. Below these two figures is given the coefficient of variability (CV), 100 S.D./M, for the correction factor.

n	Wing	Tarsus	Middle toe	Culmen	Bill depth	Bill breadth
7 *Rolandia microptera*	118.7; 1.041 CV1.1%	48.6; 1.016 CV2.6%	68.6; 1.033 CV1.4%	34.9; 1.038 CV3.0%	13.8; 1.145 CV8.3%	11.5; 1.214 CV11.7%
12 R. *rolland chilensis*	111.0; 1.018 CV1.7%	35.9; 1.006 CV1.8%	49.2; 1.022 CV1.3%	19.3; 1.025 CV2.3%	9.0; 1.030 CV3.9%	7.0; 1.029 CV6.2%
16 R. *rolland morrisoni*	114.5; 1.019 CV3.6%	36.6; 1.001 CV1.2%	52.8; 1.027 CV1.9%	23.2; 1.040 CV2.2%	10.4; 1.079 CV5.8%	8.1; 1.159 CV9.4%
9 *Podiceps occipitalis* from Puno district	138.6; 1.035 CV3.6%	38.7; 0.988 CV3.5%	52.4; 1.031 CV1.6%	20.3; 1.048 CV2.2%	7.8; 1.079 CV4.1%	7.9; 1.130 CV6.1%
6 P. *occipitalis juninensis* from Junín	130.1; 1.037 CV2.4%	37.6; 1.011 CV 1.1%	49.9; 1.038 CV1.4%	17.1; 1.004 CV 0.3%	7.6; 1.100 CV8.2%	7.6; 1.248 CV7.0%
7 P. *taczanowskii*	125.0; 1.037 CV1.5%	42.6; 1.018 CV 0.8%	56.7; 1.033 CV1.8%	30.5; 1.035 CV 1.6%	9.6; 1.134 CV3.0%	9.0; 1.156 CV6.4%

Rate of post mortem shrinkage

Six *grisegena* which were kept very dry changed quickly but only slightly. However, the figures may be misleading since the birds were not fresh when first measured (see above). All the other birds used were made into skins within a few hours after death, but since they were dried in the field, some in a tent during periods of much rain, the results may not apply to skins made in taxidermists' workshops with good conditions for drying. The birds from Peru were exposed to very moist conditions during shipment to Copenhagen, arrived quite soft, but were efficiently dried prior to the October measurement.

Specimens measured after 1–18 weeks give generally lower correction factors than the Peruvian birds, possibly because the former were not yet dry. On the other hand, no shrinkage could be detected from the 39th to the 72nd week. Unfortunately it is not possible from the data obtained to tell for certain at what interval after skinning the shrinkage stopped.

Comparison of fresh and dry specimens

Wing-length

The average correction factor for birds used in Table 2 is 1.029. It is very similar in 2 populations of *occipitalis* and the closely allied *taczanowskii* (1.035, 1.037, 1.037). Although *taczanowskii* is flightless, this is mainly due to reduction of the sternum, and the anatomy of the wing is scarcely different from that of *occipitalis* (cf. Sanders 1967). Shrinkage was similar in 2 races of *rolland* (1.018, 1.019), but the correction factor was higher (1.041) in their near relative *micropteram,* which is flightless and with reduced wings (Sanders 1967). The differences may be due to the differences in anatomy, although present knowledge of the anatomy offers no obvious explanations.

Tarsus

The shrinkage is variable and mostly insignificant. 29% of the birds gave a slight post mortem *increase,* which suggests that it is difficult to take the measurement precisely.

Middle toe

The average correction factor is 1.030, with some variations between species. Some extreme values (0.996–1.075) may be due to inaccuracies arising if the toes of skinned birds are much bent. The few *auritus* measurements suggest that the shrinkage of the 4-jointed outer toe is still larger, while that of the 2-jointed inner toe is smaller.

Bill

The average correction factor for the culmen is 1.038. The factor is small in specimens with a bill of less than 20 mm (e.g. all *occipitalis* from Junín). This suggests that particularly short-billed grebes have a thin rhamphotheka, so that the bill is filled with bone in almost its entire length.

Depth and width of bill, at base, are subject to great changes. The average correction factors are 1.093 (max. 1.322) and 1.145 (max. 1.488), respectively. Three specimens showed post mortem *increases* in one or the other dimension. The main depth factor appears correlated with the average bill length for the population. A close examination showed that correction factors for well made skins were in fact 1.00–1.11 and 1.00–1.14, respectively. The mean values are much influenced by some poor specimens in which either the bone at the bill base or the palate had been damaged by shot or in which the palate bones had been cut away in order to get rapidly through with the skinning. In such cases the basal parts of the bill may completely change shape as the drying connective tissue between the nasal rami pull them together, the bill then also easily becoming deformed by external forces.

Conclusions and recommendations

The investigation suggests greater post mortem changes than previously expected; wings as well as toes decrease by about 3%. The tarsus measurement, which does not span joints, changes very little. The marked change in bill dimensions, with a fully 4% decrease in length (except in very fine-billed examples), and considerable reduction in thickness of some (damaged) bills, may not be applicable to other birds, the amount of change probably depending on the bill anatomy. In the case of a tough bill like that of a finch, changes may be slight. Grebes are holorhinous and schizognathous, like gallinaceous and many gruiform birds, with the basal half of the bill consisting of slender, pliable bony bars. A schizorhinal (deeply split nasal bone), pliable bill, as in waders, probably allows even greater post mortem changes. Here even hypertrophy and softening of the distal part of the rhamphotheka may permit considerable post mortem shortening of the bill. Certainly separate correction factors should be calculated for different anatomical bill types.

Acknowledgements: Collection of grebes in Peru was made on a grant J. nr. 511–8136 from the Danish Natural Science Research Council.

References:

Baldwin, S. P., Oberholster, H. C. & Warley, L. G. 1931. *Measurements of Birds*. Sci. Publ. Cleveland Mus. Nat. Hist.: Cleveland.

Bröchel, K. von 1973. Vergleichende Messungen an lebenden und frischtoten Gartengrasmüchen (*Sylvia borin*). *J. Orn.* 114: 118–122.

Evans, P. R. 1964. Wader measurements and wader migration. *Bird Study* 11: 23–38.

Fjeldså, J. 1973. Distribution and geographical variation of the Horned Grebe *Podiceps auritus* (Linnaeus, 1758). *Orn. Scand.* 4: 55–86.

— 1980 The endemic grebe *Podiceps taczanowskii* of Junín, Peru. (*Wildfowl.* In press).

— Ms. Comparative ecology of Peruvian grebes. A study in mechanisms for evolution of ecological isolation. Ms. c. 160 pp.

Greenwood, J. G. 1979. Post-mortem shrinkage of Dunlin *Calidris alpina* skins. *Bull. Brit. Orn. Cl.* 99: 143–145.

Kehm, H. von 1970. Beitrag zur Methodik des Flügelmessens. *J. Orn.* 111: 482–494.

Sanders, S. W. H. 1967. The osteology and myology of the pectoral appendage of grebes. Thesis. University of Michigan, Ann Arbor.

Svensson, L. 1972. Welches Flügelmass ist richtig? *J. Orn.* 113: 111–112.

— 1975. *Identification Guide to European Passerines*. 2nd ed. Naturhistoriska Riksmuseet, Stockholm.

Vepsäläinen, K. 1968. Winglength of Lapwing (*Vanellus vanellus*) before and after skinning, with remarks on measuring methods. *Orn. Fenn.* 45: 124–126.

Witherby, H. F., Jourdain, F. C. R., Ticehurst, N. F. & Tucker, B. W. 1938–41. *The Handbook of British Birds*. Witherby: London.

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Weights of some West Indian birds

by David W. Steadman, Storrs L. Olson, John C. Barber, Charles A. Meister & Margaret E. Melville

Received 3 October 1979

In 1978 and 1979 we made 3 trips to the West Indies to collect specimens of birds for use in systematic and palaeontological studies. Each specimen was weighed in the field while fresh. In some instances the birds were weighed alive and then released. Thus we were not able to determine the sex in some specimens of sexually non-dimorphic species. All specimens are deposited in the collection of the National Museum of Natural History, Smithsonian Institution.

Barber and Steadman visited Jamaica from 2–21 April 1978, collecting at Quickstep, Trelawney Parish, and Hardwar Gap, Portland Parish. Barber and Melville visited the Dominican Republic from 2–14 August 1978, collecting at Boca de Yuma, Higüey, and Cabo Engaño in La Altagracia Province, and at Gonao, La Vega Province. Weights in Jamaica were taken with a triple beam balance. Weights in the Dominican Republic were taken with 30, 50, and 100 g Pesola spring scales. Olson and Meister collected on northwestern Andros from 4–9 August 1978, and on Grand Bahama on 17 and 18 August 1978. Weights were taken with 30 g and 100 g Pesola spring scales.

We have found no other published weights of birds from the Bahamas or the Dominican Republic. Weights of Jamaican birds are given in Blake 1956 (32 species), Cruz 1974 (15 species), Kepler 1977 (1 species), and Lack 1976 (1 species). These publications collectively provide weights for 10 species of resident Jamaican birds that are not listed in Table 1. Our weights for any one species from a given island are very similar to those of the above authors except as follows: Blake (1956) – *Columbina passerina jamaicensis,* 37.3 – 40.6 g, N=4; *Crotophaga ani*, 107.5 g, N=1.

Some interesting inter-island comparisons can be made by combining our data (Table 1) with other available weights of West Indian birds. Larger sample sizes would surely be desirable in each instance, but nonetheless some obvious differences in size can be seen in Table 2. For example, it appears that little variation in size exists between the recognized subspecies of *Columbia passerina* or *Coereba flaveola,* in sharp contrast to the striking differences between certain forms of other taxa. Especially noteworthy in Table 2 is the *Spindalis* of Jamaica weighing twice as much as the 2 forms from the Bahamas. Although *Spindalis* is traditionally regarded as a monotypic genus, Bond (1956) suggested that *Spindalis* should perhaps be divided into 3 species (*S. zena, S. dominicensis,* and *S. nigricephala*), based mainly on the coloration of the plumage of females. Our data on weights supports this treatment.

Table 1. Weights of birds from the Bahamas (B), Dominican Republic (D), and Jamaica (J). The weight of each individual to the nearest 0.1 gm. is listed for samples of 7 or fewer birds. The mean, standard deviation, range, and sample size are given in larger samples.

D	*Accipter s. striatus* ♂ (imm.) 82.0, 87.0; ♀ 105.0, 114.0
J	*Falco sparverius* subsp. ♂ 87.7
D	*Zenaida a. asiatica* ♂ 132.0, 142.0
B	*Columbina passerina bahamensis* ♂ 28.0 (juv.), 32.4, 34.8; ♀ 29.8, 35.3, 36.2, 36.4

J *Columbina passerina jamaicensis* ♂ 30.1, 35.6; ♀ 33.6
D *Geotrygon m. montana* ♂ 126.0; ♀ 126.0
B *Coccyzus minor maynardi* ♂ 56.2, 65.5
D *Coccyzus minor nesiotes* ♂ 51.5
D *Saurothera vetula longirostris* ♀ 112.5
J *Crotophaga ani* ♀ 88.7, 93.5
D *Crotophaga ani* ♂ 112.0, 116.0
D *Tachornis p. phoenicobia* ♂ 9.0, 9.5; ♀ 9.5
B *Chlorostilbon ricordii bracei* ♂ 2.5, 2.8, 2.9, 3.0, 3.0, 3.1; ♀ 2.5, 2.6, 2.7
J *Anthracothorax mango* ♂ 8.9
J *Trochilus p. polytmus* ♂ 4.5, 4.8, 5.0, 5.2, 5.3; ♀ 4.7, ±0.3 (4.1–5.1, N=11)
B *Calliphlox e. evelynae* ♀ 2.2, 2.6
D *Todus angustirostris* ♂ 8.0, 9.0; ♀ 8.0
D *Todus subulatus* ♀ 8.0
J *Todus todus* ♂ 6.5, ±0.5 (5.5–7.2, N=12); ♀ 6.4, 6.4, 6.5, 6.5; sex ? 5.6, 6.9
J *Melanerpes radiolatus* ♂ 93.7, 106.7; ♀ 97.4
D *Chryserpes striatus* ♂ 57.5, 83.0
B *Dendrocopos villosus piger* ♂ 49.3, 53.7; ♀ 52.9, 57.4
B *Dendrocopos villosus maynardi* ♂ 54.0, 54.0; ♀ 46.0, 46.5
D *Tyrannus d. dominicensis* ♂ 41.5
B *Tyrannus caudifasciatus bahamensis* ♂ 41.3, 42.5, 43.0, 45.7, 49.5; ♀ 44.8
B *Myiarchus sagrae lucaysiensis* ♂ 22.0; ♀22.1, 22.3
D *Myiarchus stolidus dominicensis* ♀ 21.0
J *Myiarchus barbirostris* ♂ 12.1, 13.9, 14.0; ♀ 11.7, 13.0; sex ? 14.6
J *Myiarchus validus* ♂ 38.6, 39.2; ♀ 41.2, 43.2
D *Contopus caribaeus hispaniolensis* ♂ 11.5
J *Contopus caribaeus pallidus* ♂ 9.3
B *Contopus caribaeus bahamensis* ♂ 10.8, 12.2; ♀ 10.3, 11.0
J *Myiopagis cotta* ♂ 11.5, 11.6
B *Callichelidon cyaneoviridis* ♂ 16.3, 16.9, 17.4, 19.5; ♀ 17.3, 18.5; sex ? 16.6, 17.6
D *Hirundo f. fulva* ♂ 19.5
J *Hirundo f. fulva* ♂ 14.7, 15.0, 15.2, 15.2, 15.2, 16.4; ♀ 14.4, 15.1, 15.2; sex ? 15.0
B *Hirundo rustica erythrogaster* ♂ 16.6
B *Sitta pusilla insularis* ♂ 10.0, 10.1; ♀ 9.8, 9.9
D *Mimus polyglottos orpheus* ♂ 45.0
B *Mimus g. gundlachii* ♂ 61.0, 64.5, 68.0, 72.0, 77.0; ♀ 57.0, 59.5, 62.0, 62.0, 85.0
J *Turdus jamaicensis* ♂ 59.0, 60.9; ♀ 54.0
J *Turdus aurantius* ♂ 78.8, 79.0; ♀ 87.6
B *Mimocichla p. plumbea* ♂ 66.4, 66.5, 68.0, 70.0; ♀ 74.0
D *Mimocichla plumbea ardosiacea* ♂ 67.0, 70.0, 70.0
J *Myadestes genibarbis solitarius* ♂ 25.0, 25.5, 27.9, 30.3, 33.2
D *Myadestes genibarbis montanus* ♀ (juv.) 25.5
D *Dulus dominicus* ♂ 50.5, 51.0
B *Vireo c. crassirostris* ♂ 13.5, 13.5, 13.6, 14.0, 14.5, 15.0; ♀ 12.8, 14.3; sex ? 13.5
J *Vireo modestus* ♂ 9.2, 9.3, 9.3; ♀ 9.2, 9.5, 9.6, 10.1, 10.4
J *Vireo osburni* ♂ 19.7, 21.5
B *Vireo altiloquus barbatulus* ♀ 18.0; sex ? 17.0, 17.5
J *Mniotilta varia* ♀ 9.6
B *Protonotaria citrea* ♂ 13.5
J *Limnothlypis swainsonii* ♀ 7.9
J *Dendroica caerulescens* ♀ 8.6, 9.6
B *Dendroica dominica flavescens* ♂ 9.0, 9.3, 9.8; ♀ 8.8, 9.0, 9.4
B *Dendroica pityophila* ♂ 7.2, 7.7, 8.1; ♀ 7.6, 8.4; sex ? 7.8, 8.2
B *Dendroica pinus achrustera* ♂ 10.5, 11.0, 11.5, 12.0, 12.7; ♀ 11.0, 11.3
J *Dendroica pharetra* ♂ 9.9, 9.9, 10.4, 10.5; ♀ 9.1, 9.6
J *Geothlypis trichas* ♂ 10.1, 10.5
B *Geothlypis rostrata tanneri* ♂ 15.1, 15.6, 16.1, 16.2, 16.3, 16.8, 17.3; ♀ 15.8, 16.1
J *Coereba f. flaveola* ♂ 8.7, ±0.3 (8.3–9.3, N=8); ♀ 7.6, 7.7, 8.2, 8.7, 8.9
D *Coereba flaveola bananivora* ♂ 9.0, 9.0
B *Coereba flaveola bahamensis* ♂ 9.0, 10.0, 10.3, 10.4, 10.5; ♀ 8.6
J *Euneornis campestris* ♂ 16.4, ±1.2 (14.6–19.2, N=23); ♀ 16.2 ± 1.3 (13.2–18.5, N=20); sex ? 15.5, 17.0

B *Spindalis z. zena* ♂ 19.5, 20.0, 21.0, 22.0, 22.5, 22.5, 23.3; ♀ 17.0, 20.5, 21.5, 22.0, 22.0, 24.5; sex ? 17.4
B *Spindalis zena townsendi* ♀ 20.9, 21.1, 22.8
D *Spindalis portoricensis dominicensis* sex ? 25.0
J *Spindalis nigricephala* ♂ 42.1, 42.3, 42.5; ♀ 47.2
D *Phaenicophilus p. palmarum* ♂ 32.0, 32.0; ♀ 24.0, 26.0, 27.0, 32.0
J *Icterus l. leucopteryx* ♂ 41.7
B *Agelaius phoeniceus bryanti* ♂ 48.0, 54.0, 57.0; ♀ 36.0, 37.0, 37.0, 39.0
D *Tiaris o. olivacea* ♀ 9.5, 10.0, 10.5
J *Tiaris o. olivacea* ♀ 8.8
B *Tiaris b. bicolor* ♂ 9.5, 10.0, 10.5; ♀ 9.0, 9.2, 9.6
J *Tiaris bicolor marchii* ♂ 10.8, 10.9, 11.6; ♀ 12.0
J *Loxipasser anoxanthus* ♂ 10.6, 10.7, 10.8, 11.4, 11.5, 11.9, 12.5; ♀ 10.5, 11.2, 11.4, 12.0, 12.1
B *Loxigilla v. violacea* ♂ 20.8, 22.5; ♀ 18.0, 18.5, 19.3, 19.5, 20.5
D *Loxigilla violacea affinis* ♂ 23.5, 24.0, 25.0, 28.5, 28.5, 28.5; ♀ 19.5, 23.5, 23.5 (juv.)
J *Loxigilla violacea ruficollis* ♂ 26.9, 28.6, 29.5, 30.1, 34.5, 37.1; ♀ 25.4, 34.5

Table 2. Inter-island variation in weight of selected taxa of West Indian birds. Males and females have been combined in species which show no apparent sexual dimorphism in size. Data from Puerto Rico is modified from that of Olson & Angle (1977).

		Bahamas			*Dominican Republic*			*Jamaica*			*Puerto Rico*		
		Av.	Range	N	Av.	Range	N	Av.	Range	N	Av.	Range	N
Columbina passerina		*C. p. bahamensis*						*C. p. jamaicensis*			*C. p. portoricensis*		
		33.3	28.0–36.4	7		—		33.1	30.1–35.6	3	35.4	30.1–39.9	9
								*39.5	?	7	**35.4	33.8–39.2	6
Todus sp.					*T. angustirostris*			*T. todus*			*T. mexicanus*		
			—		8.3	8.0–9.0	3	6.5	5.5–7.2	16	5.8	5.2–6.7	15
					T. subulatus				—		** 6.0	5.0–6.9	7
					8.0	—	1						
Hirundo f. fulva			—		19.5	—	1	15.1	14.4–16.4	10	16.1	15.2–17.3	12
Coereba flaveola		*C. f. bahamensis*			*C. f. bananivora*			*C. f. flaveola*			*C. f. portoricensis*		
	♂	10.0	9.0–10.5	5	9.0	9.0	2	8.7	8.3–9.3	8	9.3	9.0– 9.8	4
	♀	8.6	—	1		—		8.2	7.6–8.9	5	9.0	8.2– 9.35	3
	♂♂ + ♀♀							***8	?	7	**9.6	7.4–12.0	40
Spindalis sp.		*S. z. zena*			*S. p. dominicensis*			*S. nigricephala*			*S. p. portoricensis*		
		21.1	17.0–24.5	14	25.0	—	1	43.5	42.1–47.2	4	31.4	29.2–33.2	4
		S. z. townsendi						***43	?	12			
		21.6	20.9–22.8	3		—			—			—	
Loxigilla sp.		*L. v. violacea*			*L. v. affinis*			*L. v. ruficollis*			*L. p. portoricensis*		
	♂	21.6	20.8–22.5	2	26.3	23.5–28.5	6	31.1	26.9–37.1	6	34.8	31.1–39.1	12
	♀	19.2	18.0–20.5	5	22.2	19.5–23.5	3	30.0	25.4–34.5	2	29.2	23.4–36.7	8
	♂♂ + ♀♀							***30	?	7	**32.9	26.0–39.0	45

*From Blake (1956)
**From Oniki (1975)
***From Cruz (1974)

Acknowledgments: We thank the people listed below for their assistance in our field work: Jamaica—Ronald I. Crombie, Patrick Fairbairn, and Richard Frantz; Dominican Republic—Ronald I. Crombie, Annabelle de Dod, Jeremy F. Jacobs, Margaret E. Melville, and Jose Alberto Ottenwalder; Bahamas—Rose Blanchard and the staff of the Forfar Field Station, International Field Studies, Colin Higgs, and Helen F. James. Much of our travel was made possible by Fluid Research Grants from the Smithsonian Institution through S. Dillon Ripley.

References:

Blake, C. H. 1956. Some bird weights from Jamaica. *Bird-banding* 27: 174–178.
Bond, J. 1956. *Check-list of the Birds of the West Indies*. Acad. Nat. Sci. Philadelphia.
Cruz, A. 1974. Feeding assemblages of Jamaican birds. *Condor* 76: 103–107.
Kepler, A. K. 1977. Comparative study of todies (Todidae): with emphasis on the Puerto Rican Tody, *Todus mexicanus*. Publ. Nuttall Ornith. Club No. 16.
Lack, D. 1976. *Island Biology as Illustrated by the Land Birds of Jamacia*. Univ. California Press: Berkeley.

Olson, S. L. & Angle, J. P. 1977. Weights of some Puerto Rican birds. *Bull. Brit. Orn. Cl.* 97: 105–107.

Oniki, Y. 1975. Temperatures of some Puerto Rican birds with note of low temperatures in todies. *Condor* 77: 344.

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Haematozoa of British birds: post-mortem and clinical findings

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Received 3 October 1979

Most observations in recent years on the haematozoa of British birds have concentrated on birds caught for ringing purposes in cooperation with the British Trust for Ornithology (Peirce & Mead 1976, 1977, 1978a, b). In addition to these, from 1965 to 1978 a total of 426 birds was examined as post-mortem or clinical cases for the presence of haematozoa. Those results are reported here.

Materials and Methods

The clinical cases were mostly birds of prey examined since 1976, subsequent to a previous report on haematozoa found in birds of this category (Peirce & Cooper 1977). All other birds were post-mortem specimens except for Canada Geese *Branta canadensis,* Starlings *Sturnus vulgaris* and Pied Wagtails *Motacilla alba* from which blood samples were obtained during the course of work carried out by the Pest Infestation Control Laboratory.

Thin blood smears were made from either peripheral or cardiac blood (post-mortem cases only), air-dried, fixed in methanol and stained with Giemsa's solution at a strength of 1:10 at pH 7.2 for one hour. Microscopical examination was carried out under an oil immersion objective.

Results

All the birds examined are listed in Table 1. Of the 426 birds representing 66 species and 52 genera from 26 families examined, 51 (11.9%) were found to harbour one or more parasites of the genera *Haemoproteus, Leucocytozoon, Plasmodium, Trypanosoma* and *Atoxoplasma.*

With the exception of 2 Long-eared Owls *Asio otus* where the parasitaemia was too low to determine whether the parasite was a species of *Haemoproteus* or *Plasmodium,* the remaining parasites were identified to the generic level and most to species. Leucocytozoids in the Accipitridae and Falconidae were all referable to *Leucocytozoon toddi*; those in the Strigidae to *L. ziemanni. L. marchouxi* was found in Wood Pigeon *Columba palumbus* and *L. dubreuili* in Blackbird *Turdus merula. Haemoproteus fallisi* was observed in Blackbird and Song Thrush *Turdus philomelos, H. palumbis* in Wood Pigeon, *H. tinnunculi* in Merlin *Falco columbarius* and *H. figueiredoi* in Goshawk *Accipiter gentilis.* Three Tawny Owls *Strix aluco* were infected with *H. syrnii.* A parasite resembling *Plasmodium subpraecox* was seen in a Snowy Owl *Nyctea scandiaca* and *P. merulae* and *P. giovannolai* were identified from Blackbirds. The trypanosome in Tawny Owl was identified as *T. avium*; that in Blackbird morphologically resembled *T. corvi.*

Discussion

While the overall infection rate was not high, many of the birds examined were species in which haematozoa have rarely been observed, particularly in Europe (Peirce, in prep.). There was no evidence to suggest that any of the parasites were directly responsible for the deaths of the post-mortem cases. In some clinical cases however, the levels of parasitaemia with *Leucocytozoon* and *Haemoproteus* were frequently high and might have been a contributing factor to the general condition of the birds affected.

TABLE 1

Haematozoa found in British birds at post-mortem or clinical examination

Bird species	Number examined/ Number positive	Parasites found H	L	P	T	A
Accipiter gentilis Goshawk	8/3	1	3	—	—	—
A. nisus Sparrow Hawk	3/1	—	1	—	—	—
Falco peregrinus Peregrine	7/1	1	—	—	—	—
F. columbarius Merlin	5/2	1	1	—	—	—
Columba palumbus Wood Pigeon	22/1	1	1	—	—	—
Nyctea scandiaca Snowy Owl	6/1	—	—	1	—	—
Asio otus Long-eared Owl	3/2	?	2	?	—	—
A. flammeus Short-eared Owl	5/3	—	3	—	—	—
Athene noctua Little Owl	3/1	—	1	—	—	—
Strix aluco Tawny Owl	15/6	3	6	—	1	—
Motacilla alba Pied Wagtail	32/3	—	1	—	2	1
Prunella modularis Dunnock	7/3	1	—	—	—	2
Erithacus rubecula Robin	13/3	—	—	2	—	1
Turdus merula Blackbird	25/5	3	2	2	1	—
T. philomelos Song Thrush	14/4	4	—	—	—	—
Parus caeruleus Blue Tit	6/1	—	1	—	—	—
P. major Great Tit	7/2	1	—	1	—	—
Fringilla coelebs Chaffinch	2/1	1	—	—	—	—
Carduelis chloris Greenfinch	3/2	—	—	1	—	1
Acanthis cannabina Linnet	2/1	—	—	—	—	1
Passer domesticus House sparrow	4/4	—	—	—	—	4
Pica pica Magpie	1/1	1	—	—	—	—
Negative species (see list)	233/0	—	—	—	—	—
TOTAL	426/51	18	22	7	4	10

H=*Haemoproteus*; L=*Leucocytozoon*; P=*Plasmodium*; T=*Trypanosoma*; A=*Atoxoplasma*

Species of birds examined in which no haematozoa were found. Figures in parenthesis are the number examined. *Ardea cinerea* Grey Heron (1), *Branta canadensis* Canada Goose (15), *Cygnus olor* Mute swan (14), *C. cygnus* Whooper Swan (4), *Tadorna ferruginea* Ruddy Shelduck (4), *Anas platyrhynchos* Mallard (1), *A. crecca* Teal (4), *Aythya fuligula* Tufted Duck (1), *Aix galericulata* Mandarin (1), *Somateria mollissima* Eider (4), *Melanitta nigra* Common Scoter (3), *Histrionicus histrionicus* Harlequin (4), *Milvus migrans* Black kite (1), *Buteo buteo* Buzzard (6), *Haliaeetus albicilla* White-tailed Eagle (1), *Circus aeruginosus* Marsh Harrier (1), *Falco tinnunculus* Kestrel (45), *Lagopus lagopus* Red Grouse (3), *Phasianus colchicus* Pheasant (1), *Rallus aquaticus* Water Rail (1), *Haematopus ostralegus* Oystercatcher (5), *Calidris alpina* Dunlin (3), *Rissa tridactyla* Kittiwake (1), *Columba livia* Domestic Pigeon (37), *Streptopelia decaocto* Collared Dove (2), *Tyto alba* Barn Owl (1), *Apus apus* Swift (1), *Picus viridis* Green Woodpecker (3), *Dendrocopos major* Great Spotted Woodpecker (1), *Riparia riparia* Sand Martin (9), *Delichon urbica* House Martin (2), *Troglodytes troglodytes* Wren (1), *Sylvia communis* Whitethroat (1), *Phylloscopus sibilatrix* (1), *Luscinia megarhynchos* Nightingale (1), *Turdus viscivorus* Mistle Thrush (1), *Parus ater* Coal Tit (1), *Certhia familiaris* Tree Creeper (1), *Fringilla montifringilla* Brambling (2), *Pyrrhula pyrrhula* Bullfinch (3), *Passer montanus* Tree Sparrow (2), *Sturnus vulgaris* Starling (35), *Corvus frugilegus* Rook (1), *C. corone* Carrion Crow (3).

Acknowledgments: I am most grateful to Messrs. J. E. Cooper and A. G. Greenwood for the material from birds of prey and to Dr. C. J. Feare for the material from PICL.

References:

Peirce, M. A. & Cooper, J. E. 1977. Haematozoa of birds of prey in Great Britain. *Vet. Rec.* 100: 493.

Peirce, M. A. & Mead, C. J. 1976. Haematozoa of British birds. I. Blood parasites of birds from Dumfries and Lincolnshire. *Bull. Brit. Orn. Cl.* 96: 128–132. 1977. II. Blood parasites of birds from Hertfordshire. *J. Nat. Hist.* 11: 597–600. 1978a. III. Spring incidence of blood parasites of birds from Hertfordshire especially returning migrants. *J. Nat. Hist.* 12: 337–340. 1978b. IV. Blood parasites of birds from Wales. *J. Nat. Hist.* 12: 361–363.

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Seven bird species new to Bolivia

by Theodore A. Parker, III, J. V. Remsen, Jr. and J. A. Heindel

Received 4 October 1979

Fieldwork in Bolivia in the Departamento La Paz by the authors in 1979 produced specimens and sight records of 7 species not previously recorded from the country.

BUTEO LEUCORRHOUS White-rumped Hawk

On 22 July, Remsen studied an adult of this distinctive species for several minutes as it soared low over a clearing at 2575 m at Sacramento Alto, a cluster of houses 8 km by road north of the summit known as Chuspipata west of Unduavi. The bird appeared very small for a *Buteo,* smaller and with proportionately shorter wings and longer tail than *Buteo platypterus*; the plumage was uniform black except for white under tail and upper tail coverts, two or three pale bands on underside of tail, striking white underwing coverts, and primaries extensively barred white; the tarsi were conspicuously rusty-orange. No other South American raptor possesses this combination of features. Heindel, with Tom Heindel and Arnold Small, also saw a *Buteo leucorrhous* at Unduavi, c. 3000 m, on 17 August 1979. Additionally, the Carnegie Museum of Natural History has a specimen (CM 120361) of this species collected by F. B. Steinbach at Incachaca, Dpto. Cochabamba, on 25 June 1927 (K. C. Parkes *in litt.*)

This species is probably uniformly distributed in the subtropical zone of the Andes from Venezuela to northwestern Argentina despite the paucity of records within this range. There are 3 unpublished specimens at Louisiana State University Museum of Zoology (LSUMZ) from the eastern slope of the Andes in central Peru in Dpto. Huánuco (2 from Bosque Zapatagocha above Acomayo and 1 from Quilluacocha) as well as sight records from Dpto. Cuzco (Parker & O'Neill 1980).

AMPELIOIDES TSCHUDII Scaled Fruiteater

On 11 June and 1 July Parker found this species in humid, mossy forest in the Serrania Bellavista, 1675 m, 38 km by road north of Caranavi. On 26 June he saw 2 (possibly 3) 3 km further south at 1650 m, and on 27 June he collected 2 birds there: LSUMZ 90758, ♂, one testis found, 4 x 2 mm, slate-coloured; skull ossified; 95 g, moderate fat; and LSUMZ 90759 (prepared by Linda Hale), ♀, ovary 11 x 4 mm, ova not enlarged; 78 g; complete skeleton saved. Both birds had been feeding on a large red fruit (10 x 10 mm; stomach contents of LSUMZ 90759 deposited in LSUMZ Stomach Contents Collection). These individuals perched motionless for many minutes at a time in the subcanopy 10–20 m above ground, making occasional short, noisy (wing rattle) flights. The female uttered a soft chatter, barely audible, that resembled some calls of *Icterus* spp. (especially *spurius*) or of *Piaya cayana*. The song (male only?) consists of a series of rather loud, mellow, downward inflected, short whistles at 5–10 sec intervals for several minutes at a time. These are reminiscent (to Parker's ear) of calls of *Myiarchus tuberculifer*.

This species has previously been recorded only as far south as Dpto. Junín, Peru (Meyer de Schauensee 1966), at least 650 km northeast of our locality. This species' distribution is probably continuous in humid Upper Tropical and Lower Subtropical Zone forest from Venezuela south to Bolivia. Present gaps are almost certainly due to difficulty in detecting these sluggish and usually silent birds.

IDIOPTILON GRANADENSE Black-throated Tody-Tyrant

Remsen collected one specimen (LSUMZ 90804); sex?; skull 10% ossified; 7.7 g, light fat; stomach – insect parts, including small green caterpillar) on 20 July at forest edge at Sacramento Alto (see under *Buteo leucorrhous*). Single individuals were also detected there on 4 other days in the period 21 July to 8 August. All were seen at forest edge foraging at 1–6 m above ground. Parker glimpsed and heard an *Idioptilon* in this same area on 25 and 27 May that was also probably *granadense*. This species was previously known as far south as Dpto. Puno, Peru (Meyer de Schauensee 1966).

NOTIOCHELIDON FLAVIPES Pale-footed Swallow

On 25 May, Parker, Remsen, Linda Hale and Gaston Bejarano, saw at least 15 individuals of this species about 2 km by road north of Chuspipata (see under *Buteo leucorrhous*) at about 2800 m. The distinctive call notes and manner of flight (Parker & O'Neill 1980) were clearly noted. Groups of a similar size were also seen near Chuspipata between 2750 m and 2975 m on 27 May, 4 July and 5 August. This species is probably distributed continuously in a very narrow elevational band in humid temperate forest from Colombia south to Bolivia, with present gaps merely a function of the difficulty in collecting this species and its similarity to *N. cyanoleuca* (Parker & O'Neill 1980).

ODONTORCHILUS BRANICKII Grey-mantled Wren

Parker and Remsen saw 1–2 individuals on 7 different days in the period 9–26 June in the Serrania Bellavista, 1650 m, 35 km by road north of Caranavi. All were seen in mixed-species bird flocks that foraged 15 to 30 m above ground in the sub-canopy and canopy. These flocks always contained a *Cranioleuca* (almost certainly *curtata*), *Philydor rufus,* and *Xenops rutilans*. This arboreal wren, more gnatcatcher-like than wren-like in appearance, has a stereotyped and distinctive foraging behaviour: they hop along more or less horizontal branches (usually 3–10 cm in diameter), leaning over from side to side and peering at the underside of the branch, moving constantly in this manner except for brief pauses to probe scattered, small clumps of moss or lichens. The infrequently heard song, is a brief, high-pitched, monotonic trill.

This species has not previously been reported south of Dpto. Cuzco, Peru (Meyer de Schauensee 1966), but is probably distributed continuously in humid Upper Tropical Zone forest from Colombia south to central Bolivia. It is difficult to detect and to collect because it is constantly on the move high in the trees and seldom calls.

HEMISPINGUS XANTHOPHTHALMUS Drab Hemispingus

Parker, Remsen, Linda Hale and Gaston Bejarano saw 2–3 individuals of this species in humid Temperate Zone forest 1 km west of Chuspipata at about 2900 m on 27 May 1979. On 8 June, 3–4 were seen with each of 3 separate mixed-species flocks in the same area. These birds walked and hopped on top of dense foliage of small-leafed trees, a distinctive foraging behaviour characteristic of this species (Parker & O'Neill 1980). The dark grey upperparts, pale grey underparts, and distinctive, conspicuous pale yellow eye were seen clearly. Associated species were *Mecocerculus stictopterus, Myioborus melanocephalus, Conirostrum sitticolor, Anisognathus igniventris, Buthraupis montana,* and *Delothraupis castaneiventris.*

This report of *Hemispingus xanthophthalmus* is the first from outside Peru, in which it is recorded only as far south as Dpto. Cuzco (Meyer de Schauensee 1966).

DENDROICA FUSCA Blackburnian Warbler

On 17 March 1979, Heindel saw a full-plumaged male at 2250 m in forest edge in the Zongo Valley northeast of the city of La Paz. This species has been previously recorded only as far south as Dpto. Huánuco (Carpish Pass area; LSUMZ 75351, 75352).

Acknowledgements: We are grateful to Ing. Carlos Aguirre, Direccion de Ciéncia y Tecnología, for permission to work in Bolivia and to Dr. Ovidio Suarez Morales and other members of the Académia Nacional de Ciéncias for their cooperation and aid without which our fieldwork would not have been possible. Prof. Gaston Bejarano provided invaluable help throughout our studies. Parker and Remsen are grateful to Mrs. Babette Odom, Mr. John S. McIlhenny and Mr. and Mrs. H. Irving Schweppe for their generous financial support and to Tom and Jo Heindel for their hospitality in Bolivia. We thank Kenneth C. Parkes for permission to publish data from Carnegie Museum and Gary R. Graves for helpful comments on the manuscript.

References:

Meyer de Schauensee, R. 1966. *The Species of Birds of South America and their Distribution.* Narberth, Pennsylvania: Livingston.

Parker, T. A., III & O'Neill, J. P. 1980. Notes on little known birds of the upper Urubamba Valley, southern Peru. *Auk* 97: 167–176.

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Chapin's Spinetail Swift *Telacanthura melanopygia* in Ghana

by G. Lockwood, M. P. Lockwood & M. A. Macdonald

Received 18 October 1979

The range of Chapin's Spinetail Swift *Telacanthura melanopygia,* originally thought to be confined to the Congo forests, is now known to include the Upper Guinea forests as far west as Liberia (Snow 1978). Only 2 specimens from Upper Guinea are known, one from Ivory Coast (Snow 1978) and one taken by us in Ghana. Here we record the details of the latter specimen and summarise what is known of its ecology and behaviour in Ghana.

At the Cocoa Research Institute, Tafo-Akim, Ghana (6°13′ N, 0°22′ W) Chapin's Swift was regularly observed drinking from a 20 ha reservoir with other swifts (Little Swift *Apus affinis,* Palm Swift *Cypsiurus parvus,* Cassin's Spinetail *Neafrapus cassini* and Sabine's Spinetail *Chaetura sabini*). Attempts to trap swifts were unsuccessful until the 1977–78 dry season when it was possible to stretch a mist net across the water, and at 1600 h on 5 February

1978 one Chapin's Spinetail was caught. The specimen (a female) is now in the British Museum (Natural History), Tring. It was dark brown in plumage, slightly glossy, with almost pure white centres to the feathers of the chin and throat. The bill was black, the eye dark brown and the feet dark pinkish-grey. It weighed 52 gms.

The Ghanaian specimen shows no major differences in plumage from the only other skin in the British Museum, a male taken in Cameroun, though the centres of the throat feathers are darker in the latter (G. Cowles, pers. comm.). The measurements of 7 skins of Chapin's Swift are compared in Table 1. Bill and tarsus lengths are essentially similar for all skins, and although the length and proportions of wing and tail vary considerably, and apparently independently of sex, there are no grounds for separating racially the Upper and Lower Guinea populations. The Ghana bird is exceptional in having an unusually short tail.

TABLE 1

Comparison of measurements (mm) of 7 skins of *Telacanthura melanopygia* from Upper and Lower Guinea forests

Origin	Museum Collection	Sex	Wing	Tail	Tarsus	Exposed culmen	Bill to skull
Upper Guinea							
Ghana	BMNH, Tring	♀	162.0	40.0	15.0	8.5	14.5
Ivory Coast	MNHN, Paris	♀	168.5	50.5	14.5	—	14.5
Lower Guinea:							
Cameroun	BMNH, Tring	♂	c.171	49.5	15.0	8.5	14.5
Gabon	MNHN, Paris	♀	176.0	53.0	13.5	7.5	15.0
Gabon	MNHN, Paris	?	165.0	53.5	14.0	7.5	15.5
*Zaire	New York	♂	164	49.5	13.0	7.5	—
†Cameroun	?	?	165	50.0	—	—	—

*From Chapin (1915). BMNH = British Museum (Natural History).
†From Bannerman (1953). MNHN = Museum National d'Histoire Naturelle.

Field Identification. Chapin's Spinetail is distinguished in the field from all other Ghanaian spinetails by its larger size and lack of obvious white markings. The mottling on the throat is rarely discernible. The flight is rapid and powerful with the characteristic spinetail action. The wings appear distinctly paddle-shaped, the inner primaries seeming much longer than the adjacent secondaries. The tail is short and square and in head-on view the bird might be confused momentarily with Cassin's Spinetail. The size, flight and wing-shape allow recognition at considerable distances even when the lack of white cannot be ascertained.

Ecology and Behaviour. Chapin's Spinetail was found only over forest and recent forest clearings (Macdonald & Taylor 1977). It tended to feed at lower levels than other forest swifts and frequently drank from open water at Tafo and Kade. Although almost half our records were of single birds, the species often occurred in monospecific groups of up to 10 birds. These frequently indulged in noisy chases, the function of which is unknown, during which they descended to within a few metres of the ground over tracks or clearings. One chase involved 3 birds, 2 weaving close together calling 'crrr tchi' while the third broke away occasionally to dive and weave violently on its own. On 3 occasions 2 birds were seen struggling noisily calling 'creeou' from canopy height to within a few metres of the ground when they separated.

Three calls were recognized; a repeated 'crr tchi', the 'tchi' metallic; a repeated 'creeou'; and a flat click run into an unmusical trill. All the calls were unattractive, loud and harsh, more like the calls of Ussher's Spinetail *T. ussheri* than like those of Cassin's or Sabine's Spinetails.

Our only information on breeding comes from the trapped bird, which contained fairly large ova. Although birds frequently descended into partial clearings with dead and broken trees, none was ever seen showing interest in potential nest-holes. A bird in primary moult was seen in October.

Acknowledgements: We are grateful to G. Cowles of the British Museum (Natural History), Tring, who prepared the skin of the Ghanaian specimen and provided us with measurements of the Camerounian skin. Also to Dr. D. W. Snow who informed us of the location of the Ivory Coast skin and Dr. C. Erard of the Museum National d'Histoire Naturelle, Paris who kindly provided the measurements of that and the two Gabonese skins.

References:
Bannerman, D. A. 1953. *The Birds of West and Equatorial Africa.* Oliver and Boyd: Edinburgh and London.
Chapin, J. P. 1915. Descriptions of three new birds from the Belgian Congo. *Bull.Amer. Mus. Nat. Hist.* 34: 509–13.
Macdonald, M. A. & Taylor, I. R. 1977. Notes on some uncommon forest birds in Ghana. *Bull. Brit. Orn. Cl.* 97: 116–120.
Snow, D. W. 1978. *An Atlas of Speciation in African Non-passerine Birds.* British Museum (Natural History): London.

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Data on *Lagonosticta rhodopareia bruneli*

by J. Brunel, C. Chappuis, and C. Erard

Received 25 July 1979

Erard & Roche (1977) described under the name *Lagnosticta rhodopareia bruneli* a couple of firefinches collected in the mountains of Lam, near Dagbao (7° 39′N, 15° 53′E), 25 km southeast of Baibokoum, in southern Tchad, on the border with the Central African Republic. Further brief visits to this locality were made by one of us (J.B.) between January and May 1978. Supplementary information on the habitat was obtained, 2 further males were collected, and some vocalisations recorded. It is this new material which is now presented and analysed.

Morphological characters

The 2 new specimens, collected 7 May 1978 (C.G. 1979–634, 635 in the Paris Museum), are males in relatively fresh dress. It should be recalled that the 2 earlier ones, dated 16 April, were near the end of a complete moult. It seems that the male (type) described by Erard & Roche was an immature moulting into adult dress. The ochraceous tone on the abdomen would have disappeared with the completion of the moult, and been replaced by a more crimson coloration, the red of the face extending further onto the chest, which is a slightly vinous pink. These details in no way invalidate the racial characters previously defined, and which may be briefly repeated. The male has the crown and nape uniform neutral grey, clearly demarcated from the maroon of the back and wing-coverts; the face (superciliaries, lores, cheeks, chin, throat) and upper chest very bright red; the rest of the underparts pink to a slightly vinous crimson-red. The female has the face (the cheeks are only slightly washed with pink) and the underparts paler than in the male, the abdomen a little more ochraceous. Sexual dimorphism is thus relatively slight.

Measurements (in mm) are:

	Wing	Bill	Tail
3♂♂	50·5–51 (50·6)	11·5–12 (11·8)	44–44·5 (44·1)
♀	49	11	44·5

The bill is longest, most slender and least globular in *bruneli*. We will not repeat here its distinction from the other races, namely *jamesoni* (including *taruensis*), *ansorgei*, *rhodopareia* and *virata*. It will suffice to state that from their morphological analysis Erard & Roche associated *bruneli* with *virata* rather than the other forms. They also laid emphasis on the observations on captive birds by Goodwin (1964, 1969) and Harrison (1957, 1963), which strongly suggest that *virata* may be specifically distinct from *jamesoni*.

Habitat

Erard & Roche have stressed the apparent similarity (at least in physiogonomy) in the habitat of *bruneli* and *virata*, contrasting somewhat with that of the other forms. Below we will merely define more precisely that of *bruneli*.

The mountains of Lam are extensions of the crystalline massifs of Yade, culminating in the Central African Republic at 1420 m, and in Adamawa in Cameroun at c. 1700 m, their geological origin giving them a broken outline. They resemble rocky pedestals, essentially granitic, with some gneissic formations, in which numerous narrow valleys alternate with successions of level areas of bare rock and detritus, of which the area around Dagbao is typical. Torrential streams flow in the rains, but dry up almost completely in the dry season, leaving only small pools or holes of water here and there.

This region is within the Soudano-Guinean zone with 5 dry months (November to March) and a rainy season (May to October, average 1300 mm) after a prehumid period in April. Temperatures scarcely exceed 38°C in the dry season, but the difference between day and night can be as much as 20°, certain absolute minima being c. 10°. The relative humidity varies, 20–70% in the dry season and 70–100% in the rains. In general the vegetation is a shrubby savanna typical of the Soudano-Guinean zone, disturbed by annual fires.

At Dagbao the level areas are clothed in a shrubby, degraded vegetation in which *Detarium*, *Parinari*, *Grewia*, *Hymenocardia*, *Terminalia* and *Anona* dominate. By contrast, the slopes of the rocky mountains, unaffected by fires, are sheltered by certain large trees; some peculiar to these parts such as *Pterocarpus luceus* (inhabiting arid mountains), *Ficus glumosa* (characteristic of rocky regions within the Soudano-Guinean zone), *Lannea schimperi* (particularly abundant on the high plateaux of Adamawa) and *Stereospermum* (originally from Fouta Djalon, Guinea). Others more widespread are *Prosopis*, *Anogeissus*, *Cassia* and *Burkea*. It is uniquely in these rocky areas that *bruneli* dwells. The other *Lagonosticta* present, *rara*, frequents the level, shrubby areas.

The site under consideration is a plateau of large granitic slabs, bordered on the south-southeast by a series of steep, denuded hillocks, from the bases of which extends broken, rocky rubble. From this rubble there protrudes scattered shrubby vegetation with, here and there, clumps of large trees, clinging in the fractures where there is still a little fertile ground. The biotope of *bruneli* is provided by the zone intermediate between the surface of the densely shrubby savanna characterised by *Hymenocardia*, *Bauhinia*, *Anona*, *Detarium*, etc., and the steep, denuded slopes inhabited by bird species such as *Onychognathus morio*, and also *Caprimulgus tristigma*, *Cercomela familiaris* and *Cisticola emini*. The ground surface alternates with rocky rubble, bushy vegetation, denuded laterite slabs, small areas of gramineous plants, the whole with scattered clumps of large trees (*Prosopis*, *Anogeissus*, *Pterocarpus*, *Ficus*, *Lannea*).

Although not abundant, *bruneli* is not rare in this habitat; a count revealed 3 pairs over a distance of 1 km. The social unit is clearly the pair. The birds fly from rock to rock, on which they like to perch and call as recorded below. Quite wary, on the least alarm they take refuge in leafy bushes or in fractures in the rocks, perching only rarely in trees. They feed mainly on small seeds of gramineous plants, and readily resort to the large granitic slabs where the village women come to pound their millet or dry their cassava.

Acoustic comparison between rhodopareia *and* bruneli

The sound elements used are from the recordings made by J. Brunel near Dagbao on 15 May 1978 with a magnetophone UHER 4000 and a parabolic reflector; the disc of Nicolai in the series Kosmos: 'Prachtfinken'; and the data provided by Payne (1973), mainly concerning *jamesoni*. The sounds available have provided tracings in an amplitude-frequency on a Kay Elemetrics 7029A SonaGraph on a scale of 160 to 16000 Hz with a time resolution of 1·6 second per tracing. We thank Professor F. Bourlière for having placed the necessary equipment at our disposal.

Before studying the analogies or divergences which may be apparent between *L. rhodopareia* and *bruneli*, one must first compare the two different samples of *L. rhodopareia jamesoni* presented by Nicolai and by Payne. Nicolai presents 8 structures of different notes belonging to 5 types (Fig. 1): (A). Ascending note, strongly modulated (3000–6500 Hz), in rapid series (alarm). (B1). Sharp descending note (7500–5500 Hz). (B2). Note first ascending, then going through evolutions as in B1. (C1). Ascending a little, short, final accentuation above 3500 Hz. (C2). Related to preceding, more rapidly modulated. (C3). Likewise related, persisting only in an accentuation above 3500 Hz. (D). Gently ascending, 2500 to 7500 Hz. (E). Halting note, of complex harmonic structure, average frequency progressively ascending.

In his audiospectrograph 6, Payne (1973: 69) shows 8 types of different notes (counting as a type the 3 alarm notes a, b and c, all very similar, and as another type e and f, similar in the slowness of the variations of frequency and in the extent of modulation).

Between these 2 authors there are only 3 notes analogous or identical: (A) of Nicolai=a, b and c of Payne; (C2) of Nicolai=d of Payne; (D) of Nicolai=e and f of Payne. Apart from these 3 common to both, there are 2 original notes for Nicolai and 5 for Payne. This shows that the samples are very incomplete, but this is not unexpected, since neither author attempted to study numerous individuals of all ages from all regions and in all situations, captive or free, of this one species.

As to *bruneli*, the available elements of its repertory can be classed as follows (Fig. 2):—(A). Ascending note strongly modulated (3000–6500 Hz) in rapid series (alarm). The note is identical in *jamesoni*, in which however the rhythm is more rapid (Fig. 1.A). (B). Descending note, sharp, with slight final accentuation (7000–4000 Hz), analogous to that of *jamesoni* (Fig. 1B), isolated or in series (song). (C1). Short vibrant note, sharp (7000 Hz), near to *jamesoni* (Fig. 1. C1). (C2). Short note, sharp, slack (6000 Hz). (C3). Very short note, sharp, repeated (6000 Hz), analogous to that of *jamesoni* (Fig. 1. C3). (D). Note descending slowly in frequency, finally ascending, emitted in series in the form of a song. Although this note has no equivalent in *jamesoni*, one finds it in an imitation of *jamesoni* made by *Vidua chalybeata amauropteryx* (audiospectrograph 11 of Payne, 1973: 74, last note in series f). (E). Note of complex structure of average frequency, somewhat ascending (compare *jamesoni*, Fig. 1.E).

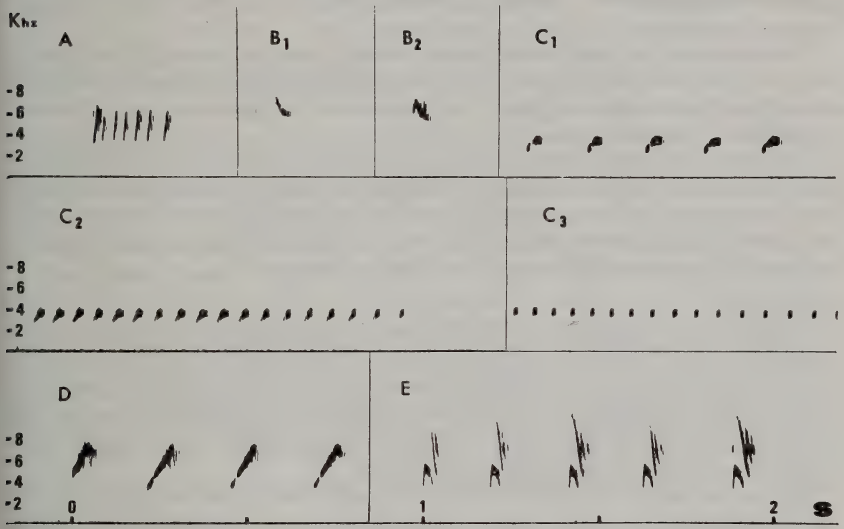

Fig. 1. *Lagonosticta rhodopareia jamesoni*. Sonagram after the disc of Nicolai (wide-band filter, 300 Hz, scale of frequency 160–16000).

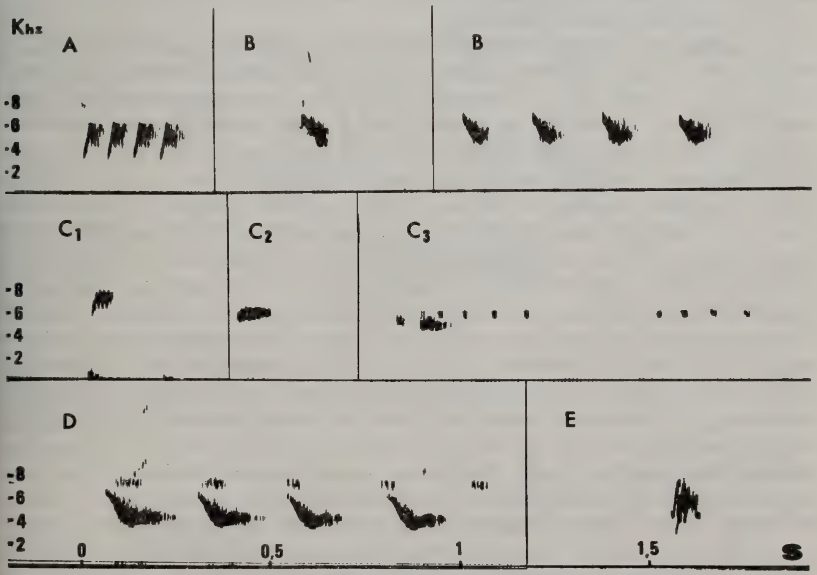

Fig. 2. *Lagonosticta rhodopareia bruneli*. Sonagram of recordings by J. Brunel (wide-band filter, scale of frequency 160–16000).

Thus we have for *bruneli* 7 types of notes. A and B are practically identical with A and B in *jamesoni*; C1 and C3 resemble strongly *jamesoni* C1 and C3; C2 in *bruneli* approaches h of Payne. Only notes D and E have no direct equivalent in *jamesoni*. On a final assessment, *bruneli* and *jamesoni* have 5 types of notes in common, even 6 if the imitation of *Vidua* is accepted. This significant proportion of 6 out of 7 notes clearly shows the affinity between these 2 populations.

Furthermore, the structure of song is simple and identical: either a series in slow rhythm of notes (some 5 per second) strongly and slowly modulated in frequency, or a series in rapid rhythm of notes (some 10 to 12 per second) in general little modulated.

The acoustic divergencies between *bruneli* and *jamesoni* (not exceeding, or even less important than, those noted in the 2 series of *jamesoni* studied above) are limited, and concern essentially only the rhythm of the *roulade* ('roll') of alarm and the frequency of the notes, with little or no modulation— c. 6000 Hz for *bruneli* as against 3500 Hz for *jamesoni*.

Discussion

Studies of the behaviour of *Lagonosticta* relate essentially to birds in captivity (Goodwin 1964, 1969, Harrison 1957, 1962 a, b, 1963, Kunkel 1967, Nicolai 1964) and were concerned essentially with clarifying Estrildidae systematics. Only Morel (1973) znd Payne (1973) were really concerned with field studies. Morel worked only on *L. senegala*, and Payne was mainly interested in vocalisations imitated by *Hypochera*.

Colour-patterns, especially those exhibited laterally for display, together with vocalisations are important in sexual and even individual recognition. By contrast, little is known about visual and acoustic mechanisms together in specific recognition. In the absence of experimental work, one cannot actually determine the significance of any particular morphological or acoustic difference in specific isolation.

In *Lagonosticta*, visual stimuli in the form of highly ritualised displays, would seem more important than voice in pair-formation (cf. for example Morel, 1973: 100, for *L. senegala*). However, one cannot exclude voice entirely in pair-formation, as attested for *L. rhodopareia jamesoni* by Immelmann & Immelmann (1967: 625) from their observations *in natura* in Rhodesia. They found that one male keeps apart from a group and displays with the stem of a plant, singing at the same time and this attracts any unattached female. On her approach there follows a specific greeting behaviour ('Greeting display' of Goodwin, 'Recognition posture' of Harrison, 'Curtseying' of Kunkel). In fact, Immelmann & Immelmann do not indicate whether the stem display and the song are delivered simultaneously or alternately and this is important, since the observations on *Lagonosticta* in captivity, or even on *senegala* in the wild, stress that during the stem display the vocalisations emitted do not constitute a true song but are isolated notes audible at only very short range. By contrast, males are known to emit a solitary song (inhibited by the presence of a congener, cf. Harrison 1962 b), which is varied and relatively far carrying. In *L. rhodopareia*, according to Goodwin (1964: 105), this solitary song is a mixture of the elements of its repertoire, exclusive of the alarm notes. So one may ask whether the observations of the Immelmanns do not in fact concern unattached males trying to attract females by their solitary song, performing the stem display on their approach, followed by ritual greetings when still closer together. In these circumstances, the solitary song provides for specific identification of the male by the female. Recognition would be followed (by the female) or started (by the male) according to visual criteria (behaviour and/or colour patterns) during displays at close quarters.

Accepting that all *Lagonosticta* showing much red in the plumage evoke aggression in other males of the genus, one might suppose that the meeting of a female *bruneli* with a male *rhodopareia* (nominate, *jamesoni* or *ansorgei*) would compel such reactions in the latter. But it must be stressed that the female of *bruneli* is not completely andromorphic (absence of red on the cheeks, presence of ochraceous on the underparts), so that a male's aggression might not be roused, and the female be recognised as such by her behaviour on approach. Likewise, there is nothing to stop one supposing that a male *bruneli* would accept a female *rhodopareia* despite her dull colour. Goodwin (1969) stresses the physiological incompatibility which seems to exist between *jamesoni* and *virata*, and to suggest that they are specifically distinct. A male *jamesoni* and female *virata*, after a long period of reciprocally aggressive behaviour (perhaps due to their similarity in colour, though nevertheless with a divergence in voice), did finally pair off and numerous eggs were laid, of which only one hatched. We cannot assume the existence of ethological isolating mechanisms between *virata* and *bruneli*, all the more so because the displays of *bruneli* remain unknown; while the vocalisations of *virata*, described by Harrison and by Goodwin (who found differences from those of *jamesoni*), have not been the subject of mechanical recordings but only of onomatopoeic transcriptions and descriptions not permitting precise acoustic comparisons.

TABLE 1

		Rhodopareia jamesoni		*R. bruneli*	
	Structure	Rhythm	Frequencies	Rhythm	Frequencies
'Roulade' ('Roll') or 'Rattle' (Fig. 1 and 2. A)	Slope of modulation less strong in *bruneli*	29/sec.	3000–6500 Hz	14·5/sec.	3000–6500 Hz
'Trill' (Fig. 1 and 2. C3)	notes little or unmodulated in both	17/sec.	3500 Hz	12·5/sec.	6000 Hz
Song		Average 4·8 notes /sec.	3500–7500 Hz	Average 4·5 notes /sec.	4000–7000 Hz
Note isolated not modulated in frequency (Payne 6=h, i and Fig. 2. C2)			long note 4500 Hz short note 3500 Hz		? short note 6000 Hz
Note isolated moderately modulated, descending in frequency	structures very close		5500–7500 Hz		4000–7000 Hz
Note isolated, complex (Fig. 2. E)			?		Average frequency around 5000 Hz

Table 1. Resemblances and divergences in the vocalisations of *Lagonosticta rhodopareia jamesoni* and *L. r. bruneli.*

Among those differences which we have revealed in comparing the vocalisations of *bruneli* and *rhodopareia* (see Table 1), those in the rhythm of the 'roll' or 'rattle' (corresponding to the alarm call) are doubtless important in specific recognition, although this call may be made during relief at the nest (Goodwin 1969). The trill and the short unmodulated note are in the category of contact calls, and can be utilised in the song (cf. Payne 1973: 88). There is no answer to the question whether, in fact, the difference of rhythm of the trill and above all the use of well separated frequencies, constitute parameters of specific acoustic recognition.

Thus we continue to consider *bruneli* as a well marked geographical race of *L. rhodopareia*. The important differences in colour and voice show that it is an old isolate, perhaps suitably regarded as a semispecies.

Acknowledgement: We are indebted to C. W. Benson for translating our manuscript.

References:

Erard, C. & Roche, J. 1977. Un nouveau *Lagonosticta* du Tchad méridional. *L'Oiseau et R.F.O.* 47: 335–343.

Goodwin, D. 1964. Observations on the Dark Firefinch with some comparisons with Jameson's Firefinch. *Avicult. Mag.* 70: 80–105.

— 1969. Observations on two Jameson's Firefinches. *Avicult. Mag.* 75: 87–94.

Harrison, C. J. O. 1957. Notes on the Dark Fire-finch. *Avicult. Mag.* 63: 128–130.

— 1962a. An ethological comparison of some Waxbills (Estrildini), and its relevence to their taxonomy. *Proc. Zool. Soc. Lond.* 139: 261–282.

— 1962b. Solitary song and its inhibition in some Estrildidae. *J. Orn.* 103: 369–379.

— 1963. Jameson's Firefinch and Dark Firefinch. *Avicult. Mag.* 69: 42.

Immelmann, K. & Immelmann, G. 1967. Verhaltensökologische Studien an afrikanischen und australischen Estrildiden. *Zool. Jb. Syst.* 94: 609–686.

Kunkel, P. 1967. Displays facilitating sociability in waxbills of the genera *Estrilda* and *Lagonosticta*. *Behaviour* 29: 237–261.

Morel, M. Y. 1973. Contribution à l'étude dynamique de la population de *Lagonosticta senegala L.* (Estrildidés) à Richard-Toll (Sénégal). Interrelations avec le parasite *Hypochera chabybeata* (Müller) (Viduinés). *Mem. Mus. Nat. Hist. Nat.* A, Zool. 78: 1–156.

Nicolai, J. 1964. Der Brut parasitismus der Viduinae als ethologisches Problem. *Z. Tierpsychol.* 21: 129–204.

Payne, R. B. 1973. Behaviour, mimetic songs and song dialects, and relationships of the parasitic indigobirds (*Vidua*) of Africa. A.O.U. *Orn. Monogr.* 11.

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Further notes on uncommon forest birds in Ghana

by M. A. Macdonald

Received 24 October 1979

Macdonald & Taylor (1977) described the occurrence of several rare or little known birds in forest habitats in Ghana. The notes below, which are based mainly on work done between September 1977 and July 1978, supplement the earlier observations. Co-ordinates for the places mentioned are shown in Table 1.

Cassinaetus africanus Cassin's Hawk-eagle. On 17 Nov 1977 an adult was apparently incubating on the nest found in the previous December in the Pra Suhien Forest Reserve (Macdonald & Taylor 1977). An active colony of White-naped Weavers *Ploceus albinucha* surrounded the nest. The other adult eagle perched in the open in nearby trees, often close to the observer, showing little sign of alarm. Occasionally it called a rather weak cracked 'tcheea' and a loud 'whi whi whi whoi' repeated thrice, both calls of similar quality to calls of the Allied Hornbill *Tockus fasciatus*. When a pair of Crowned Eagles *Stephanoaetus coronatus* soared high over the nest, the perched bird rose and saw them off. When the nest was next visited on 17 December, no eagles were seen and the weavers had deserted their colony. The eagles were not seen on subsequent monthly visits, the last of which was on 24 June 1978.

TABLE 1

Co-ordinates and brief descriptions of places in Ghana named in the text

Place	*Co-ordinates*	*Description*
Ankasa G.P.R.	5° 13′N, 2° 39′W	Primary forest
Ejinase	5° 15′N, 1° 30′W	Cocoa farm
Pra Suhien F.R.	5° 19′N, 1° 24′W	Closed secondary forest
Kakum F.R.	5° 20′N, 1° 22′W	Closed secondary forest
Aduamoa F.R.	6° 42′N, 0° 46′W	Closed secondary forest
Amedzofe	6° 52′N, 0° 28′E	Mixed habitats on forest-savanna boundary

G.P.R. = Game production reserve. F.R. = Forest reserve

AGAPORNIS SWINDERNIANA Black-collared Lovebird. Two additional records were obtained of birds flying over the canopy at Kakum F.R. on 26 Jan 1978 (3 birds) and at Pra Suhien F.R. on 7 April 1978 (1 bird).

MELIGNOMON sp. Honeyguide. A single bird resembling the unnamed species known from Cameroun and Liberia (Snow 1978) was seen at about 5 m range in Kakum F.R. on 2 Oct 1977. The slender but not exceptionally fine bill identified it as *Melignomon*. In size it was similar to the Little Greenbul *Andropadus virens,* thus differing from the similarly plumaged Honey-guide Bulbul *Baeopogon indicator* (larger) and Cassin's Honey-guide *Prodotiscus insignis* (smaller) which occurred in the same forest. Above, it was dark olive. Head and underparts were pale smoky grey. The tail was white with obvious dark tips to the rather broad feathers. The eye was dark. Bill and leg colour were not noted. The bird was skulking in a small tree (? *Trema*) about 3 m above the ground.

APALIS SHARPEI Sharpe's Apalis. The call of this species was recognised in December 1977 as a quiet but far-carrying 'pirit pirit pirit . . .', the stress falling on the first syllable. Subsequent sight and aural records confirmed that the species was common in forest reserves, although more often heard than seen. New locality records were at Ankasa Game production Reserve, Ejinase, Pra Suhien F.R. and Aduamoa F.R.

REMIZ FLAVIFRONS Forest Penduline Tit. This species, apparently rare in the Upper Guinea forests (Hall & Moreau 1970), is the subject of a puzzling observation. It was seen first on 12 June 1977, when at least 30 were feeding in the low foliage and among the debris of old weaver-ant *Oecophylla* sp. nests in Kakum F.R. They were scattered singly or in groups of 2–3 birds. On 15 June only 2 were seen, and on 19 June none was recorded even after a careful search of the upper foliage. The species was not seen again.

NIGRITA LUTEIFRONS Pale-fronted Negro-finch. Two birds, behaving as a pair, were seen foraging in low secondary growth on the edge of a farm among partly cleared forest at Amedzofe on 3 June 1978. The species is listed by Serle *et al.* (1977) as occurring in Ghana, but I have found no other reference to its presence west of Nigeria.

JUN PURCHASED ZOOL

Acknowledgements: I am grateful to Mr. A. Forbes-Watson for discussion of the honey-guide record, and to Prof. P. G. Jarvis who kindly provided facilities at the University of Edinburgh where the paper was prepared.

References:

Hall, B. P. & Moreau, R. E. 1970. *An Atlas of Speciation in African Passerine Birds.* Trustees of the British Museum (Nat. Hist.): London.

Macdonald, M. A. & Taylor, I. R. 1977. Notes on some uncommon forest birds in Ghana. *Bull. Brit. Orn. Cl.* 97: 116–120.

Serle, W., Morel, G. J. & Hartwig, W. 1977. *A Field Guide to the Birds of West Africa.* Collins: London.

Snow, D. W. 1978. *An Atlas of Speciation in African non-Passerine Birds.* Trustees of the British Museum (Nat. Hist.): London.

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IN BRIEF

Ornithology in the Malagasy Faunal Region

In my article 'Fifty years of ornithology in the Malagasy Faunal Region' (*Bull. Brit. Orn. Cl.* 1980: 100(1): 76–80) I omitted mention in the last paragraph under *Madagascar* of any publication in *Arnoldia* (*Rhod.*). Two containing significant information, both by M. P. Stuart Irwin and myself, are: 5(33), 1972, dealing with *Pachycoccyx audeberti*; and 7(17), 1975, in which the genus *Crossleyia* is resuscitated and returned to the Timaliidae from the Pycnonotidae.

28 April 1980 C. W. Benson

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Dunlin *Calidris alpina* breeding in China

Voous (1960) describes the breeding distribution of Dunlin *Calidris alpina* as almost circumpolarly holarctic, the most southerly breeding area being the British Isles. Occasionally, however, Dunlin breed further south than this. Abel Chapman shot a bird off a C/4 at Jerez de la Frontera, Andalucia, Spain on 24 April 1872. This clutch is in the Seebohm collection at the British Museum (Natural History) Tring (reg.no. 1901.1.1.5002–5–M. Walters, pers.comm.) and was recorded by Seebohm (1888).

In China, the Dunlin is not regarded as a breeding species (Cheng 1976 and pers.comm.). Jones (1911) however suggested that Dunlin may breed in the locality of Wei Hai Wei (Shantung peninsula), although proof of this has been lacking. A series of Dunlin skins from the Academy of Natural Sciences, Philadelphia, was examined by me which included a pullus obtained at Tsingtao, Shantung on 7 May 1927 by Rufus H. Lefevre (reg. no. 108004). P. J. Morgan (National Museum of Wales) and I estimated the pullus to be about 2½–3 weeks old and incapable of flight. R. M. de Schauensee (Academy of Natural Sciences) assures me that the specimen label is reliable, so that there can be no doubt as to the authenticity of the specimen.

Acknowledgements: I am indebted to the Academy of Natural Sciences, Philadelphia for the loan of specimens.

References:

Cheng, T. 1976. *Distributional List of Chinese Birds.* Peking.

Jones, M. B. 1911. On some birds observed in the vicinity of Wei Hai Wei, north-east China. *Ibis* 9 (5): 657–695.

Seebohm, H. 1888. *The Geographical Distribution of the Family Charadriidae or the Plovers, Sandpipers, Snipes, and their Allies.* London.

Voous, K. H. 1960. *Atlas of European Birds.* London: Nelson.

25 January 1980 Julian G. Greenwood

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Published by the BRITISH ORNITHOLOGISTS' CLUB and printed by
The Caxton and Holmesdale Press, 104 London Road Sevenoaks Kent.

ISSN 0007-1595

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Bulletin of the

British Ornithologists' Club

Edited by

Dr. J. F. MONK

Volume 100 No. 3 September 1980

FORTHCOMING MEETINGS

Tuesday, 18 November 1980 at the Senior Common Room, South Side, Imperial College, Princes Gardens, S.W.7 at 6.30 p.m. for 7 p.m. Dr. Christoph Imboden, on *Some endangered bird species in New Zealand and work by the New Zealand Wildlife Service to save them from extinction,* with illustrations by colour slides. Those wishing to attend should send their acceptances with a cheque for £4.75 a person to the Hon. Secretary at 2 Chestnut Lane, Sevenoaks, Kent TN13 3AR (telephone Sevenoaks (0732) 50313) to arrive not later than first post on Thursday, 13 November 1980.

Dr. Imboden is Executive Director of the International Council for Bird Presevation and, until taking up that appointment earlier this year, was Director of Research in the New Zealand Wildlife Service, so is exceptionally well aquainted with the problems of endangered bird species, of which New Zealand has some 10% of the world total.

Tuesday, 13 January 1981 at the same venue at 6.30 p.m. for 7 p.m. Mr. Stanley Cramp, O.B.E., President of the Union, on Ornithology and Conservation in Europe.

Tuesday, 3 March 1981 at the same venue, Professor G. M. Dunnet, Ph.D., Regius Professor of Natural History at Aberdeen University, will speak on Thirty years of Fulmars.

Gifts or offers for sale of unwanted back numbers of the *Bulletin* are very welcome

COMMITTEE

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BRITISH

Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 100 No. 3 Published: 20 September 1980

MEETINGS

The seven hundred and twenty-eighth Meeting of the Club was held at Sevenoaks on Saturday, 31 May 1980, commencing at 11.40 a.m.

Those participating were:–

Members—B. GRAY (*Chairman*), J. K. ADAMS, Mrs. D. M. BRADLEY, D. GRIFFIN, Dr. P. F. HARRISON, P. HOGG, J. PARKER and R. E. F. PEAL.

Guests — Miss M. BARRY, M. COATH, Dr. D. L. HARRISON, Mrs. P. HOGG, Mrs. R. E. F. PEAL and Miss R. THORPE.

In the morning there was a visit to the Harrison Zoological Museum in which Dr. D. L. Harrison showed the Club the fine collection of mounted specimens and some of the very large collection of unmounted skins. A buffet lunch, kindly provided by Mrs. R. E. F. Peal at 2 Chestnut Lane, followed and the afternoon was spent at the reserve established by the late Dr. J. G. Harrison on gravel pits at Sevenoaks. Here, Dr. P. F. Harrison, assisted by Mr. M. Coath, conducted the party, explaining the development of the area as a Wildfowl Refuge, and a number of interesting species were seen. It rained in the morning but the afternoon was dry and the Meeting ended about 5 p.m.

The seven hundred and twenty-ninth Meeting of the Club was held in the Senior Common Room, South Side, Imperial College, London, S.W.7 on Tuesday, 8 July 1980 at 7 p.m. The attendance was 22 members and 19 guests.

Members present were:– D. R. CALDER (*Chairman*), J. K. ADAMS, Mrs. S. VERE BENSON, K. F. BETTON, Mrs. D. M. BRADLEY, R. D. CHANCELLOR, P. CONDER, S. CRAMP, R. A. N. CROUCHER, A. GIBBS, B. GRAY, D. GRIFFIN, P. HOGG, P. A. D. HOLLOM, Rev. G. K. McCULLOCH, J. PARKER, R. E. F. PEAL, E. M. RAYNOR, P. S. REDMAN, S. A. H. STATHAM, A. VITTERY, C. E. WHEELER.

Guests present were:– F. B. S. ANTRAM, Miss M. BARRY, Miss S. N. CONDER, Miss S. P. F. DIXON, E. F. J. GARCIA, R. A. HUME, A. M. HUTSON, Mrs. C. INSKIPP, T. P. INSKIPP, J. KING, G. P. McCULLOCH, Mrs. I. M. McCULLOCH, BILL ODDIE, T. PARMENTER, Mrs. R. E. F. PEAL, Miss E. V. PILCHER, RICHARD PORTER, Mrs. B. W. V. VITTERY, W. H. N. WILKINSON.

Mr. Richard Porter spoke on "Raptor migration in Europe and the Middle East" and illustrated his address with many excellent slides. He dealt primarily with raptors that need thermals on migration to Africa and also with other soaring birds migrating thither. He gave numbers of the various species observed crossing in autumn the Straits of Gibraltar, the Bosphorus and the Pontus mountains near the east end of the Black Sea respectively; he discussed the timing and origin of these birds and their routes onward.

Diet and subspeciation in the Gentoo Penguin *Pygoscelis papua*

by A. J. Williams

Received 28 November 1979

Pygoscelis penguins – Gentoo *P. papua*, Adélie *P. adeliae*, and Chinstrap *P. antarctica* – have their centre of distribution in the Scotia Arc region, where, on the belt of islands from the Antarctic Peninsula to the South Sandwich Islands (approximately 56°–65°S), all 3 species breed sympatrically (Watson 1975). These islands fringe seas which contain the greatest concentrations of euphausiid crustaceans in the southern hemisphere and euphausiids predominate in the diet of all three *Pygoscelis* penguins in the Scotia Arc region (Bagshawe 1938, White & Conroy 1975, Trivelpiece *et al.* in prep.). Gentoo Penguins, largest of the *Pygoscelis* penguins, take the largest individual euphausiids (Trivelpiece *et al.* in prep.).

Within the Subantarctic – roughly the zone between areas covered by pack ice in winter and the subtropical convergence – Adélie and Chinstrap Penguins are scarce, with only small breeding populations at a few localities, but the Gentoo Penguin is widespread and breeds at most island groups (Watson 1975). Within this zone the few available reports suggest that fish is more important in the diet of Gentoo Penguins than krill (Murphy 1936, Ealey 1954, pers. obs.). At South Georgia, where krill predominate in the diet during the entire breeding season (from November to February), there is in February a significant increase in the amount of fish taken by Gentoo Penguins and the ability to catch fish may be critical in the occasional years when krill swarms fail to appear in inshore waters (Croxall & Prince in press). If, as seems likely, larger body size in penguins is correlated with ability to dive to greater depths, then Gentoo Penguins should be able to dive and feed at greater depths than other *Pygoscelis* penguins, which may account for the greater frequency of fish, including benthic species, in their diet when compared with the diet of Adélie and Chinstrap Penguins (White & Conroy 1975, Croxall & Prince 1980, Trivelpiece *et al.* in prep.).

Two subspecies of Gentoo Penguin are currently recognised: *P.p. ellsworthi* which breeds in the Scotia Arc region, and nominate *papua* which breeds further north on Subantarctic islands including South Georgia (Murphy 1947, Stonehouse 1970). Normally – following Bergmann's rule – high latitude taxa have larger bodies but reduced extremities compared with related taxa at lower latitudes. In the Gentoo Penguin however the high latitude subspecies *ellsworthi* is smaller and has proportionately longer feet and flippers than the low latitude *papua* (Stonehouse 1970). This anomaly may be explained if, in areas where krill are often or occasionally scarce, Gentoo Penguins have developed a larger body size in response to the need to take more fish. That a change from a predominantly krill diet to one in which fish predominate may be important in producing subspeciation in the Gentoo Penguin is supported by the difference in the size and shape of the bill in the two subspecies. The bill of *ellsworthi* is terminally slender and has a small culmenicorn and resembles the bill of the essentially krill-feeding Chinstrap Penguin; the bill of nominate *papua* is longer, terminally broad and has a large culmenicorn and more nearly resembles the bill of *Spheniscus* penguins which feed largely upon fish (Murphy 1947: Fig. 1).

Acknowledgements: I am obliged to my colleague R. K. Brooke for useful comments on this paper.

References:

Bagshawe, T. W. 1938. Notes on the habits of the Gentoo and Ringed or Antarctic Penguin. *Trans. Zool. Soc. London* 24: 185–306.

Croxall, J. P. & Prince, P. A. 1980. Food of Gentoo Penguins *Pygoscelis papua* and Macaroni Penguins *Eudyptes chrysolophus* at South Georgia. *Ibis* 122: 245–253.

Ealey, E. H. M. 1954. Analysis of stomach contents of some Heard Island birds. *Emu* 54: 204–209.

Murphy, R. C. 1936. *Oceanic Birds of South America.* New York: American Mus. Nat. Hist.

Murphy, R. C. 1947. A new zonal race of the Gentoo Penguin. *Auk* 64: 454–455.

Stonehouse, B. 1970. Geographic variation in Gentoo Penguins *Pygoscelis papua*. *Ibis* 112: 52–57.
Trivelpiece, W., Butler, R. G. & Volkman, N. J. In prep. Chinstrap penguin as an ecological indicator of krill abundance in the Antarctic.
Watson, G. E. 1975. *Birds of the Antarctic and Sub-Antarctic*. Washington D.C.: American Geophysical Union.
White, M. C. & Conroy, J. W. H. 1975. Aspects of competition between Pygoscelid penguins at Signy Island, South Orkney Islands. *Ibis* 117: 371–373.

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A small breeding colony of the Rock Pratincole *Glareola nuchalis liberiae* in Togo

by Robert A. Cheke

Received 12 December 1979

There are 2 recognised races of the Rock Pratincole *Glareola nuchalis*. *G. n. nuchalis,* which has a white nuchal collar, occurs in eastern, central and southern Africa and its range meets that of the western race *G. n. liberiae,* distinguished by its rufous collar, in Cameroon (White 1965). Dekeyser (1951) recorded *G. n. liberiae* in Togo, but I am not aware of any documented breeding records of Rock Pratincoles in that country and little information has been published about this West African subspecies.

The colony in Togo, which I visited during the spring and early summer of 1979, was near Landa-Pozanda (9°31′N, 1°17′E) on the Kara river, southeast of Lama-Kara (9°33′N, 1°12′E). At the breeding site, the river was interrupted by an expanse of rock which stretched across the river bed, providing ample space for the birds except when the water level was very high. J. F. Walsh observed at least 8 Rock Pratincoles there on 18 April 1979, but I saw only 4 on 7 and 11 May. Five were present on 19 May and 6, all adults, on 26 May. The early morning and late evening were the usual times when the pratincoles flew to hawk for insects above the river or over the gallery forest fringing it. The crepuscular habits of the species were also noted by Brosset (1979), who associated this behaviour with diurnal variations in the timing of flights by their insect prey. When the pratincoles were feeding over the water at Landa-Pozanda they often accompanied other aerial plankton feeders such as Palm Swifts *Cypsiurus parvus,* White-rumped Swifts *Apus affinis* and Wire-tailed swallows *Hirundo smithii;* but above the trees their most common companions were Broad-billed Rollers *Eurystomus glaucurus*. During much of the day the pratincoles stood inactive on the rocks but when it was very hot they often squatted in crevices, frequently "gaping".

On 26 May a greeting display was observed after one bird returned from a flight and landed facing another adult bird. On landing, the newcomer immediately crouched submissively and uttered a trilling call while its mate stretched its body upwards so that its head was almost vertically above its feet. The birds then reversed these positions; while the arriving bird raised its head up again and stretched its neck to the vertical, so that its body profile was much more attenuated than usual, the other bird crouched by lowering its head and neck below the horizontal but raised its tail and also made trilling calls. These calls were different from the usual warning cries. A photograph taken of this behaviour reveals that the nuchal collar of the arriving bird was flared into a fan so that at the back of its head the rufous patch was 3–4 times greater in size than usual. This flaring of the nuchal collar suggests that it is of importance in sexual displays and that it may be instrumental in maintaining subspeciation where the two races meet, although birds with intermediate collars are known (Snow 1978).

The breeding habits of *G. nuchalis* were described by Vincent (1945), who stated that no nests are made and that the eggs are laid in a slight hollow in a rock. C/2 is usual, although sometimes only one egg is laid. I was unable to locate any eggs at Landa-Pozanda but in June it became clear that one pair was holding a territory on an isolated strip of rock and that the other 2 pairs shared a larger expanse of rock close to the river's edge. One of these pairs always became very excited whenever I approached a large crevice between two rocks in this area. I once saw a pratincole enter this gap and later emerge from it but I was unable to reach far enough to determine whether or not it contained any eggs or young.

Only 3 pairs of pratincoles were seen and these 6 adults were alone on 3 July; but on the evening of 7 July they were accompanied by 4 fledglings, which could not fly but were well feathered. I had, possibly, overlooked them on my previous visit as their plumage is cryptic against the rocky background and Brosset (1979) illustrates this with a photograph of 2 juveniles hiding in a crevice. Bannerman (1951) described the young of *G. n. liberiae*, and I can only add that the bill and eyes of the Togo juveniles were wholly black, their legs dull orange. There was a grey wash on their breasts, a character also mentioned by Bannerman (1951), but White (1945) states that the breast feathers of juvenile *G. n. nuchalis* are fringed with buff.

The unusual manner in which the young are fed and their behaviour towards the adults has not been described. At 18.15 hours on 7 July, a juvenile with its head lowered ran very fast towards an adult, which had just returned from a flight, and collided with it at full speed. The young bird then pivoted in a semi-circle around the adult with its head buried in the latter's breast feathers. When the juvenile stopped moving it raised its head and the parent bird promptly passed it some food from its bill. On a second occasion after a similar series of movements, which presumably serve to stimulate the adult to regurgitate food from its crop, the parent dropped the food onto a rock from which the juvenile picked it up. Later, an adult returned from a feeding flight and landed about 5 m away from a young bird where it dropped some food on the rock surface before walking towards the juvenile. The latter charged at the adult as usual and pivoted in a half circle about it. The adult immediately dropped some more food which the young bird took at once. Next, the adult turned and walked towards where it had left the first morsel. The young bird eventually followed but did not locate the food until the adult pecked at it, whereupon the young bird helped itself. On some occasions the juveniles pestered the adults by pecking directly at their bills. Two of the 4 juveniles were being fed by one pair and the other 2 juveniles were apparently the progeny of the 2 other pairs, but it is also possible that some of these birds were acting as helpers.

On the evening of 10 July the juveniles were still unable to fly and at this time there were still plenty of exposed rocks for them; but during the night the river level rose dramatically and the following morning most of the pratincoles' usual resting sites were submerged and they were forced to sit on the few remaining vantage points. It is very probable that if the river had risen in this fashion only a few days earlier, when the juveniles had been younger and more vulnerable, they would have perished. Brosset (1979) said that juvenile *G. nuchalis* can swim like ducklings, but at this site the force of the Kara river in full flood would have swept any bird to its death. All 10 birds were still alive on 15 July, the first date when I saw a young bird fly, and they were still present on 20 July, the last date when I visited the site. At least one bird was there on 26 October (J. F. Walsh).

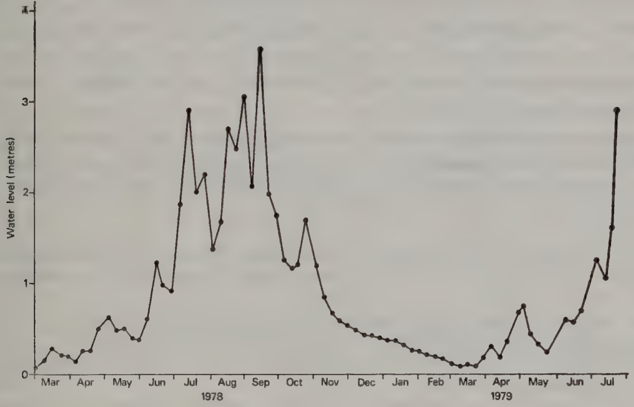

Fig. 1. The water level (metres) of the Kara River, taken weekly at Lama-Kara.

Fig. 1 shows weekly water level readings taken from March 1978 to July 1979 using a gauge in the Kara river at Lama-Kara, which is close to Landa-Pozanda. The birds evidently began breeding at a time when the river was beginning to rise (May–June), in contrast to some East African populations of *G. n. nuchalis* which complete breeding before the water levels start to rise (Benson & Irwin 1965). If a low water level, however, is the factor determining the timing of breeding then, according to Fig. 1, the birds would be expected to breed between December and April. Presumably, therefore, other influences are involved, and an increase in the availability of insect prey with the onset of the rains may be important. The ecology of *G. n. nuchalis* has been discussed by Brosset (1979) who described the results of 9 years' study of a colony in Gabon. Brosset concluded that at his site there were 2 breeding periods each year, both coinciding with dry seasons, and suggested that the visual stimulus of the re-appearance of rocks in the river provided the cue for the birds to start laying. Brosset also said that his birds were sedentary and that during the rainy seasons when their usual rocky haunts were submerged they became elusive and less visible by perching in trees. This observation contrasts with the views of Benson & Irwin (1965), who considered that the species was a regular migrant, an opinion supported by Tree (1969) and Elgood *et al.* (1973). The latter referred to Wells & Walsh (1969), who observed *G. nuchalis* on the Niger river at Borgou, in Nigeria, only between 9 March and 1 September, during which time it was only common between late April and mid-July. This restricted period coincides with the time when the river was at its lowest, although ample rock space was available until mid-November (J. F. Walsh). Snow (1978) also states that these pratincoles breed when the rivers are at their lowest. However this was not the case in Togo, as the river was beginning to rise in March and it was very high in both 1978 and 1979 during July (Fig. 1), the month when the fledglings appeared. Thus the species' breeding can be a precarious process. The birds in Togo did not lay until the rains began, but then had to rear their fledglings before these rains had increased sufficiently to turn the river, at their site, into a torrent. However, it is possible that the young were a second brood or that the first clutches had failed and the birds consequently bred later than usual. Also if the birds are migrants they may be able to breed elsewhere, at other times of the year, and so have 2 breeding periods a year like the Gabon birds. The latter can, of course, benefit from 2 dry seasons without migrating.

Acknowledgements: I thank J. F. Walsh for telling me about the existence of the pratincole colony and for his encouragement and comments. S. Sowah kindly gave me access to the water level data collected by the W.H.O. Onchocerciasis Control Programme. J. A. Coles and R. J. Douthwaite criticised the manuscript.

References:

Bannerman, D. A. 1951. *Birds of Tropical West Africa.* Volume 8. Crown Agents: London.

Benson, C. W. & Irwin, M. P. S. 1965. Some intra-African migratory birds, II. *Puku 3:* 45–55.

Brosset, A. 1979. Le cycle de reproduction de la glareole *Glareola nuchalis*; ses determinants ecologiques et comportementaux. *La Terre et la Vie.* 33: 95–108.

Dekeyser, P. L. 1951. Mission A. Villiers au Togo et au Dahomey (1950). III. *Oiseaux.* Etudes Dahoméens 5: 47–84.

Elgood, J. H., Fry, C. H. & Dowsett, R. J. 1973. African migrants in Nigeria. *Ibis* 115: 1–45.

Snow, D. W. (ed). 1978. *An Atlas of Speciation in African Non-passerine Birds.* British Museum (Nat. Hist.): London.

Tree, A. J. 1969. The status of Ethiopian waders in Zambia. *Puku 5:* 181–205.

Vincent, A. W. 1945. On the breeding habits of some African birds. *Ibis* 87: 345–365.

Wells, D. R. & Walsh, J. F. 1969. Birds of North and Central Borgu. *Bull. Niger. Orn. Soc.* 6: 63–93.

White, C. M. N. 1945. Notes on a small collection from Sesheke, Northern Rhodesia. *Ibis* 87: 573–574.

White, C. M. N. 1965. *A Revised Check List of African Non-passerine Birds.* The Government Printer: Lusaka.

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Larus relictus—a review

by A. R. Kitson

Received 12 October 1979

Introduction

During an ornithological survey of wetlands in Mongolia in 1977 (Kitson 1978) I observed Relict Gulls *Larus relictus* at a new site. Much of the published material on this species proved difficult to obtain and to be predominantly in Russian. This review is intended to bring together in English the facts known about *Larus relictus.*

When Dwight wrote his monograph on the gulls of the world (1925), *Larus* *relictus* had yet to be discovered. The original specimen (see below) was examined by Lönnberg (1931b), who considered it to belong to an undescribed race of Mediterranean Gull and named it *Larus melanocephalus relictus.* Dementyev (1951) reappraised the specimen and, puzzled by its uniqueness, invoked the idea that it might not be a form of *melanocephalus* at all, but an aberrant Brown-headed Gull *L. brunnicephalus.* Alexander (1955) lists it as a subspecies of *melanocephalus* without comment. Mayaud (1956) dismissed Dementyev's suggestion in preference for Lönnberg's view. Voous (1960) seemingly upheld Lönnberg's classification too and duly extended the range of *melanocephalus* by some 5000 km to include southern Gobi. Vaurie (1962) compiled a monograph on the specimen; he too was bedevilled by its continued uniqueness – that part of Asia having been collected over quite widely – and concluded that it must be a hybrid *L. brunnicephalus* x Great Black-headed Gull *L. ichthyaetus*, despite their disparity in size, and adduced palaeological and geological theory to dispute the evolutionary implication inherent in Lönnberg's hypothesis. Not until Auezov (1970) revealed a colony of gulls on lake Alakul identical to the problematic skin was the dilemma resolved. The following year the same author published a full account of this colony, the main data of which were given in support of his claim for *Larus relictus* Lönnberg, a distinct species. Since then the other records presented below have come to light, the most recent being my own from Orok Nor and those from Hök Nor, Mongolia. A brief résumé of these events and of the status of *relictus* is given by Isenmann (1977). Cheng Tso-hsin (1976) merely mentions the original individual for China. Tuck (1978) includes *relictus* in his field guide. Voous (1973) has bestowed upon it the English name Relict Gull.

Records of Larus relictus

L. relictus is known from 9 sites in central, eastern and southeastern Asia.

1. The original specimen came from southern Gobi, collected by K. G. Söderbom, a member of Sven Hedin's expedition, on 24 April 1929 at Tsondol on the Etsin* river in northern Inner Mongolia, now in Kansu, China (41° 53′ 30″N, 101° 6′ 33″E)† (Lönnberg 1931a). It is an adult (sex unknown) in breeding plumage and is housed at the Naturhistoriska Riksmuseum of Stockholm.

2. An adult was collected on 9 April 1935 on the west shore of Po Hai (Gulf of Chihli), near the port of T'ang-ku (39° 00′N, 117° 40′E), not far from T'ien-ching (Tientsin), China. It lay unrecognised in the Zoological Institute of the Academy of Science in Leningrad until its discovery by Auezov (1971).

3. At the Torey lakes in Transbaikalia, some 250 km southeast of Chita on the Mongolian border (50° 9′N, 115° 15′E), flocks of up to 30 were seen in May 1963, a single was taken on 12 May 1965 on the eastern lake (Dzoon Torey Nor), and a colony of over 100 pairs was discovered in June 1967 on the western lake (Baroon Torey Nor). Although initially identified as *brunnicephalus* (Leontyev 1968, reported in Auezov 1971), they have since been redetermined as *relictus* (Auezov 1971, Larionov & Cheltsov-Bebutov 1972).

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*In Mongol it is Etsin or Edsin Gol (gol=river); in Chinese it is evidently called Jo Shui (Times Atlas). †With the exception of this set of coordinates—given by Lönnberg himself—all others are my own and are approximations only. An absence of coordinates indicates that I was unable to pin-point the locality on the maps available to me.

4. An adult collected 15 May 1966 at Bayan Nor (nor=lake), a small lake just south of Buir Nor in eastern Mongolia near the Manchurian frontier (47° 40′N, 117° 36′E), was falsely labelled as Black-headed Gull *L. ridibundus* and remained so in the collection of the Institute of Biology, Mongolian Academy of Science, Ulan Bator until discovered and correctly identified as *relictus* by Stubbe & Bolod (1971).

5. In 1968 a colony of 25–30 pairs was found on Sredni island (0.6 km²) in lake Alakul, Kazakhstan (46° 12′N, 81° 44′E) (Auezov 1970). It was the investigation of this colony which led to the recognition of the species *L. relictus* (Auezov 1971). Of 193 young ringed there between 1968 and 1971, 3 have been recovered. The first, ringed at 15–20 days old on 25 June 1968, was recovered in the southwest part of Alakul, some 30–40 km south of Sredni island on 25 September of that year (Auezov 1974).

6. The sixth record is of the second recovery from Sredni, a juvenile, ringed as a chick 1–5 days old on 3 June 1971 and recovered on 29 August of the same year in the Abayesk region of Semipalatinsk Oblast, 250–300 km northwest of Sredni island (Auezov 1974).

7. The seventh record is of the third and most exciting recovery from Sredni, a 1–5 day old chick ringed on 3 June 1971 and recovered on 30 September that year at lake Bai-ti-Long, Kuangnin province, north Vietnam (Auezov 1974).

8. In 1977 I found about 20 pairs at Orok Nor in Mongolia (45° 00′N, 100° 45′E) 24 April–5 May, and 3 at nearby Taatsing Tsagan Nor (45° 10′N, 101° 28′E) 6–7 May.

9. Three adults were collected at Hök Nor, Mongolia (49° 30′N, 115° 35′E) on 5 July 1977 and have been deposited with the Institute ofBiology, Academy of Science, Ulan Bator (A. Bold and D. Batdelger).

Breeding stations of *Larus relictus* have thus been established at lake Alakul in Kazakstan (no. 5 site) and at the Torey lakes (no. 3) in Transbaikalia. Judging from the dates of collection, it is likely that both Buir Nor (no. 4) and Hök Nor (no. 9) in eastern and northeastern Mongolia are also breeding posts. Furthermore, although my visit toO rok Nor (no. 8) in mid south Mongolia in April was too early in the season to secure direct proof of breeding, I suspect that here lies a fifth breeding locality, since all birds there were paired adults and apparently prospecting for nest sites. That *relictus* does not, or at least did not, breed at Orok Nor is however suggested by its failure to be detected there by previous investigators. For instance, neither Kozlova (1932, 1933), who collected at Orok Nor in the summer of 1925 and during the entire spring of 1926, nor Piechocki (1968), who visited it in early June 1962, reported any strange gulls. Kozlova noted that Black-headed Gulls which had been very abundant in April ". . . left in the middle of May, and none remained in that region [Orok Nor] to breed" suggesting that, had *relictus* been present with and overlooked among the *ridibundus*, they likewise must have moved on. During a survey of the Great Lakes in western Mongolia in summer 1979 (Kitson in prep.) I found no trace of *relictus*.

The individual from Inner Mongolia (no. 1) was collected on an early date and might reflect a migration route rather than a breeding site. The remaining 3 records are more enigmatic. The juvenile (no. 6) reported in August northwest of its fledging site was presumably a wanderer or on post-fledging dispersal, since a northerly migration in autumn is intuitively unlikely. Although the juvenile reported in Vietnam (no. 7) on 30 September may be considered as a directional migrant heading for winter quarters, it may also be an example of post-fledging dispersal. Moreover, the adult from the Yellow Sea in April (no. 2) may hardly be treated as a winter record, rather as a migrant or vagrant. In short the wintering area of *Larus relictus* remains unknown, but may tentatively be thought of as lying between T'ien-ching and Vietnam in the East and South China Seas.

Field characters

My experience of *relictus* is limited to the adult plumage. In the comparisons made below I am familiar with all species except *L. saundersi*, which I have not seen.

Adult. In the field the adult *relictus* strongly recalls *melanocephalus*, particularly second-year individuals, by virtue of the black marks at the wing tip. It is larger than *ridibundus* (Fig. 1) and differs from it in having a more extensive, blackish (not brown) hood, a heavier bill and predominantly whitish wings. Similarly, from *brunnicephalus* it may be identified by its mostly black (not wholly brown) head and whiter wings. Relict Gulls continually reminded me of small *ichthyaetus*, having in common both wing pattern and head pattern. From the rare Saunders' Gull *L. saundersi* and Little Gull *L. minutus*—the only other Asiatic hooded gulls—*relictus* must be quickly distinguishable by its greater size in every respect and lack of black on the underwing (excepting the wing tip). Notwithstanding the unlikelihood of *relictus* being encountered within the range of *melanocephalus*, the adults of these 2 species are readily separable by their wing pattern, the primaries of *melanocephalus* appearing entirely white, those of *relictus* being marked with black (Fig. 1). On the other hand *melanocephalus* in second-year plumage normally shows some black markings on the leading primaries and, although this pigmentation is often far more reduced than in adult *relictus*, other differentiating characters need to be made use of: *relictus* is bigger than *melanocephalus*, is longer in the leg, has a more massive bill (see below under measurements), a hood which is chocolate-coloured anteriorly and dull sooty black posteriorly (whereas it is black in *melanocephalus*), and periorbital flashes which are more pronounced than in *melanocephalus*.

Detailed description

(a) *Measurements.* Table 1 shows that *relictus*, in comparison with *melanocephalus*, is longer in wing, tail and tarsus; its bill is marginally longer and marginally deeper at the angle. Its wing and tail dimensions overlap those of *brunnicephalus*.

(b) *Plumage and bare parts*

Adult. Head, region at base of bill and forehead chocolate brown, becoming increasingly black posteriorly; crown, hind neck, sides of head and throat dull sooty black. The hood extends to the nape and is especially extensive down the throat. There is a pair of white periorbital flashes, one above and one below the eye, spreading backwards, larger than in *melanocephalus* and similar to those in *ichthyaetus*. Nape, underparts, underwing and tail white. Mantle, rump and upperwing coverts pearl-grey. Remiges appear white, though apparently inner primaries and outer secondaries are pale grey (Stubbe & Bolod 1971). Primaries 2–7 are marked with black distally, the extent varying individually (see Auezov 1971). All tips are white. The tiny first primary is white. Bill and legs are venous-blood red.

Table 1 Some measurements (mm and g) of *Larus relictus* and other Asiatic *Larus* hooded gulls.

Species	No. Sex	Wing length	Tail length	Tarsus	Culmen	Depth of bill at base	Depth of bill at angle	Weight	Source
relictus	1	340	123	59	37 53†	11.3	—	—	Lonnberg 1931b
relictus	1	355	138	58	36	11.5	—	—	Stubbe & Bolod 1971
relictus	5♂♂	338–352 (344.8)	134–150 (142.1)	53–61 (58.1)	(36.6)	(11.5)	(11.8)	(518.6)	Auezov 1971
relictus	6♀♀	(322.3)	(136.6)	(55.6)	(34.4)	(10.2)	(11.3)	(462.8)	Auezov 1971
melanocephalus	5♂♂ 5♀♀	290–317* (300.7)	99–119 (111.3)	44–50 (46.9)	42–49† (44.5)	—	—	—	Vaurie 1962
melanocephalus	?	291–311	113–127	50–55	—	—	—	—	Auezov 1971
melanocephalus	9♂♂	291–311 (303.3)	118–127 (122.9)	48–53 (51.1)	33–38 (35.5)	10–12 (11.0)	10–12 (11.3)	—	Dwight 1925
melanocephalus	12♀♀	282–296 (289.4)	113–120 (116.5)	47–51 (48.3)	31–36 (33.4)	10–11 (10.5)	10–11.5 (10.7)	—	Dwight 1925
brunnicephalus	5♂♂ 5♀♀	322–352* (337.1)	122–134 (126.5)	47–54 (50.3)	—	—	—	—	Vaurie 1962
brunnicephalus	5♂♂	335–347 (339)	129–138 (133.6)	46–52 (50.4)	50–58† (53.5)	—	—	—	Auezov 1971
brunnicephalus	13♂♂	322–347 (338.2)	126–140 (135.1)	49–55 (52.7)	36–44 (40.5)	11–13 (11.8)	11–12 (11.6)	—	Dwight 1925
brunnicephalus	12♀♀	309–328 (322.7)	121–135 (127.5)	45–54 (49.1)	34–39 (37.7)	10–11 (10.9)	10–11 (10.4)		Dwight 1925
ichthyaetus	9♂♂	470–500 (483.1)	180–203 (189.8)	74–83 (78.5)	58–65 (61.7)	18–21.5 (19.8)	18.5–22 (21.0)	—	Dwight 1925
ichthyaetus	8♀♀	422–468 (451.2)	171–185 (177.1)	65–76 (71.2)	50–60 (55.9)	16–19 (17.5)	16–20 (18.4)	—	Dwight 1925
ridibundus sibiricus	11♂♂	305–325 (312.4)	121–133 (126.6)	43–49 (46.4)	34–39 (36.8)	9–10.5 (9.7)	8.5–10 (9.3)	—	Dwight 1925
ridibundus sibiricus	10♀♀	280–300 (290.0)	108–125 (116.9)	41–46 (43.4)	32–38 (34.0)	8–9 (8.4)	8–9 (8.3)	—	Dwight 1925
saundersi	9♂♂	277–293 (283.7)	105–115 (109.5)	42–44 (43.2)	28–29 (28.3)	9.5–11 (10.3)	9–11 (10.0)	—	Dwight 1925
saundersi	6♀♀	268–282 (275.3)	101–107 (104.0)	39–41 (40.5)	23–27 (25.2)	8.5–10 (9.4)	8–9.5 (8.9)	—	Dwight 1925

Averages in parentheses.
*Wing flattened in this case, otherwise not known.
†Measured from skull in this case, otherwise from feathers.

Immature. So far as I know this plumage is undescribed.

Juvenile. (From Auezov 1971.) Head largely white. Nape, mantle and upperwing coverts reddish (*borovata*)-brown with white fringes. Uppertail coverts, underparts and underwing coverts white. Remiges – the black on the primaries is far more extensive than in the adult: 2nd* and 3rd primaries black, sometimes with a white mark on inner web of 2nd; on the inner webs of the succeeding primaries the white gradually becomes more extensive, approaching to within 50mm of the tip on 4th, and within 40mm on 5th; on 6th the outer web is white for 70mm from the base and there is a subterminal black band 30mm wide on the inner web; 7th and 8th are white with a black subterminal band 20 and 13mm respectively from the tip; 9th,

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* I have increased all Auezov's numbers by one to take account of the tiny first primary, which he evidently ignored.

10th and 11th primaries and secondaries are white; the tips of all primaries are white. Tail – the outer 2 tail feathers are all white, the others each bearing one black-brown spot 10–12mm from the tip, together forming a subterminal band. Bill black, lightening somewhat towards the base. Legs and feet dark grey.

Nestling. (From Auezov 1971.) The downy nestlings of *relictus* are pure white, resembling those of *ichthyaetus* so closely that they are separable only by size, whereas those of *melanocephalus* are speckled brown, buff and grey (Witherby *et al.* 1938–41). Bill black, legs and feet dark grey. At 10–12 days old reddish-brown feathers with white borders begin to grow on the nape and shoulders. The weight of a nestling 1–2 days old was 59g, and of one on 23 June 1969 was 299g (Auezov 1971).

Egg. Light olive colour with blackish or dark brown spots. Of 20 measured the average dimensions were 59.8 x 42.1mm (57.0–62.0 x 41.5–44.0) (Auezov 1971), whereas the average of 100 *melanocephalus* eggs was 53.73 x 38.11mm (47.8–61.9 x 34.9–42.0) (Witherby *et al.* 1938–41). The usual clutch size is 3, but varies from 1 to 4 (Kovshar 1974).

Voice. I found *relictus* to be clamorous in flight, frequently uttering a far-carrying laughing 'ka-ka, ka-ka, kee-aa' recalling *ichthyaetus.* (See also Zubakin *et al.* 1979, Boswall & Dickson in press).

Food. Fish, crustacea and insects are given by Zhuravlev (1975).

Habitat. Orok Nor is a slightly saline lake set in the arid-steppe zone of Mongolia. Its shores are shallow with some mud, sand and fine shingle. In April Relict Gulls in pairs scouted the shores. They often sat on the water and stood on the shore, normally isolated, but sometimes on the edge of a *ridibundus* flock.

Alakul is also saline. Sredni island rises in terraces to 65m above sea level (Auezov 1971) and supports, besides *relictus,* large breeding colonies of Caspian Tern *Hydroprogne tschegrava,* Gull-billed Tern *Gelochelidon nilotica,* Common Tern *Sterna hirundo,* Herring Gull *L. argentatus* and Great Black-headed Gull *L. ichthyaetus.* These are the same members of the family Laridae, besides *ridibundus,* present with *relictus* at Orok Nor. At the Torey lakes too, *relictus* breeds alongside *argentatus* and *H. tschegrava* (Larionov & Cheltsov-Bebutov 1972).

At Alakul, *relictus* usually nests on islets just above the normal water level at the edge of Sredni island, where the nests are prone to flooding during storms. Between 1969 and 1974 the number of breeding pairs fluctuated between none (1973) and 120 (1972), the poorest years generally being those when flooding of the nest sites occurred (Kovshar 1974, Auezov 1975, Zhuravlev 1975). Likewise, the Torey lakes population is susceptible to rising water levels (Potapov, *in* Borodin *et al.* 1978). Such vulnerability has led to the inclusion of *relictus* in the USSR Red Data Book (Borodin *et al.* 1978).

SUMMARY

L. relictus is an Asiatic hooded gull generally resembling *melanocephalus* of Europe. It differs, however, in (a) being bigger in every respect: it has a longer wing, longer tail, longer tarsus and slightly more massive bill. The adult differs in having (b) primaries marked with black distally, (c) a more extensive hood, which is chocolate brown, not black, anteriorly, and (d) the periorbital flashes more prominent. The juvenile differs in having (e) white

secondaries and (f) completely white outer tail feathers. The nestling differs (g) in being wholly white. The wing pattern of the adult and the white nestling are features in common with *ichthyaetus*.

Acknowledgements. The British Council and the British Embassy in Ulan Bator made my visits to Mongolia possible. Tim Inskipp unearthed esoteric references. He, Peter Grant and Dr. P. Devillers made valuable comments and criticism to earlier drafts. Jeffery Boswall lent me a sound recording of *relictus*. Tim Parmenter processed the photographs. Preparation of this paper would have been impossible without the help of translators. In this context I thank Mrs. Diane Willis (German), Mr. Angus Roxburgh and Mrs. S. Knufken (Russian), John Fry and Patrick Lo (Chinese).

References

Alexander, W. B. 1955. *Birds of the Ocean* (2nd ed.). Putnam: New York.

Auezov, E. M. 1970. [Discovery of a colony of Relict Gull *Larus relictus*.] *J. Kazakh. Acad. Sci. Alma-Ata.* No. 1 (297): 59. (Russian).

— 1971. [Taxonomic evaluation and systematic status of *Larus relictus*.] *Zool. J. Acad. Sci. Moscow* 50: 235–242. (Russian).

— 1974. [North Vietnam—a new place for finding *L. relictus*.] *Zool. J. Acad. Sci. Moscow* 53: (1): 139. (Russian).

— 1975. [*Larus relictus* at lake Alakul.] In [*Colonies of water birds and their protection*]. Moscow. (Russian).

Borodin, A. M. *et al.* 1978. [*USSR Red Data Book*.] Lesnaya Promyshlennost. Moscow. (Russian).

Boswall, J. & Dickson, W. Additions to a Discography of Soviet Wildlife Sound. *Rec. Sound.* (In press).

Cheng Tso-hsin. 1976. [*Distributional list of Chinese birds*] (2nd ed.). Peking. (Chinese).

Dementyev, G. P. 1951. *In* G. P. Dementyev & N. A. Gladkov (eds) *Birds of the Soviet Union*. Israel Program for Sci. Translations: Jerusalem (1969).

Dwight, J. 1925. The gulls *Laridae* of the world. *Bull. Amer. Mus. Nat. Hist.* 52: 63–401.

Isenmann, P. 1977. A propos de *Larus relictus*. *Alauda* 45: 2–3.

Kitson, A. R. 1978. Notes on the waterfowl of Mongolia. *Wildfowl* 29: 23–30.

Kovshar, A. F. 1974. *Larus relictus*. In [*Birds of Kazakhstan*] 5. Alama-Ata (1974): 407–411. (Russian).

Kozlova, E. V. 1932, 1933. The birds of southwest Transbaikalia, northern Mongolia and central Gobi. *Ibis* Ser. 13(2): 316–348, 405–438, 576–596; Ser. 13(3): 59–87, 301–332.

Larionov, V. F. & Cheltsov-Bebutov, A. M. 1972. [Discovery of *L. relictus* on the Torey lakes, Transbaikalia.] *Ornithologiya* 10: 277–279. (Russian).

Leontyev, A. N. 1968. [The nesting colony of gulls and cormorants on the Torey lakes.] *News of the Transbaikalia Geog. Soc. USSR* 4: 6. (Russian).

Lönnberg, E. 1931a. A contribution to the bird fauna of Southern Gobi. *Arkiv for Zool.* 23A(12): 1–18.

— 1931b. A remarkable gull from the Gobi Desert. *Arkiv for Zool.* 23B(2): 1–5.

Mayaud, N. 1956. Nouvelles données sur *Larus melanocephalus* Temminck. *Alauda* 24: 123–131.

Piechocki, R. 1968. Beiträge zur Avifauna der Mongolei. Teil 1. Non-Passeriformes. *Mitt. Zool. Mus. Berlin* 44: 149–292.

Stubbe, M. & Bolod, A. 1971. Möwen und Seeschwalben (Laridae, Aves) der Mongolei *Mitt. Zool. Mus. Berlin* 47: 51–62.

Tuck, G. S. 1978. *A Field Guide to the Seabirds of Britain and the World*. Collins: London.

Vaurie, C. 1962. The status of *Larus relictus* and of other hooded gulls from central Asia. *Auk* 79: 303–309.

Voous, K. H. 1960. *Atlas of European Birds*. Nelson: London.

— 1973. List of recent holarctic bird species—non-passerines. *Ibis* 115: 612–638.

Witherby, H. F., Jourdain, F. C. R., Ticehurst, N. F., Tucker, B. W. 1938–41. *The Handbook of British Birds*. Witherby: London.

Zhuravlev, M. N. 1975. Observations of *Larus relictus*. In [*Colonies of water birds and their protection*]. Moscow. (Russian).

Zubakin, V., Ilinsky, I., Nikolsky, I. D., Pukinsky, Y. & Syoma, A. 1979. [*Voices of Rare Animals and Birds*] (Russian). 25cm 33 1/3 rpm, 33M71–41505/6. Melodia.

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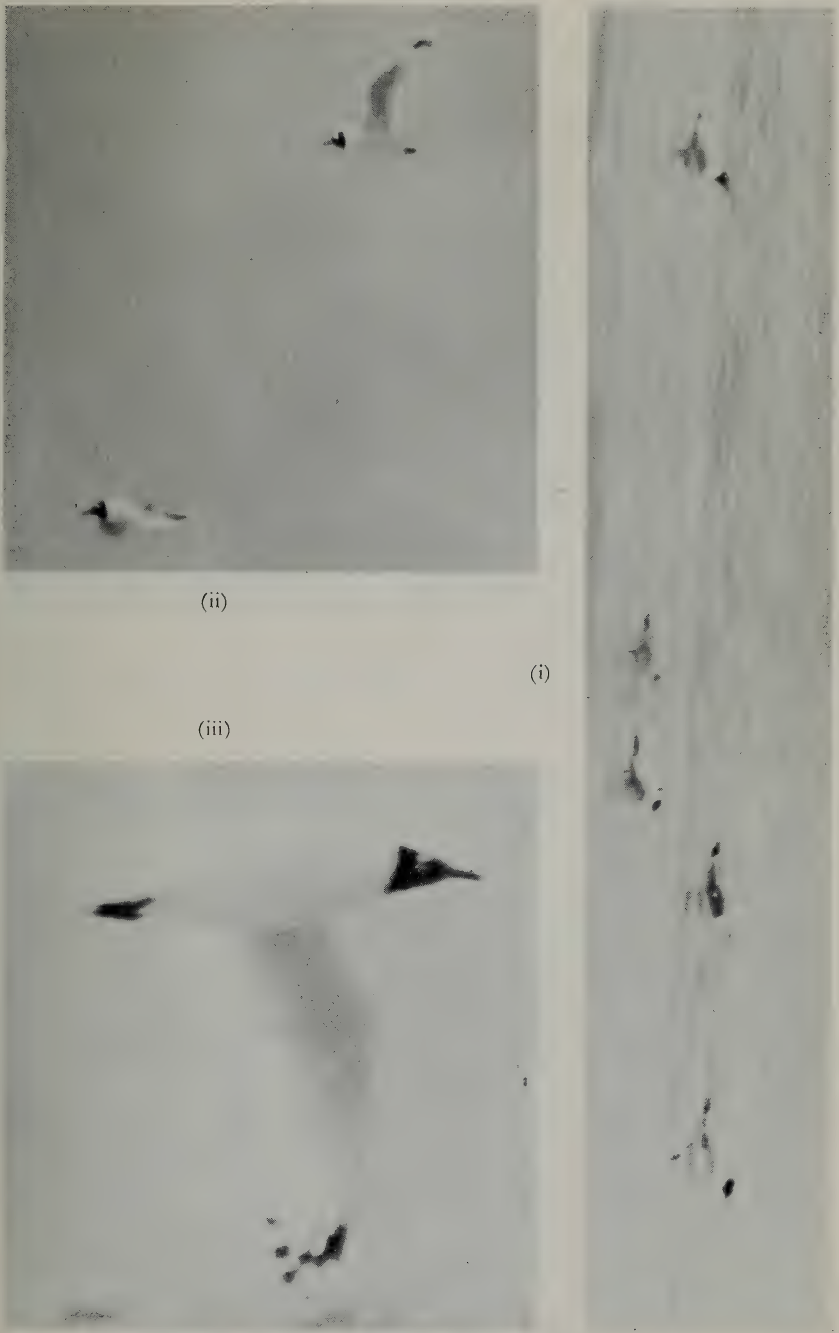


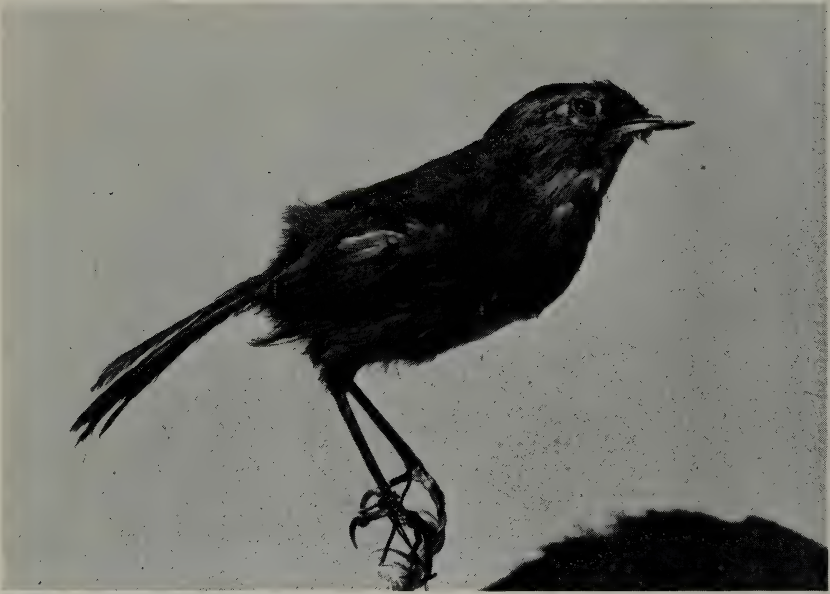
(ii)

(i)

(iii)

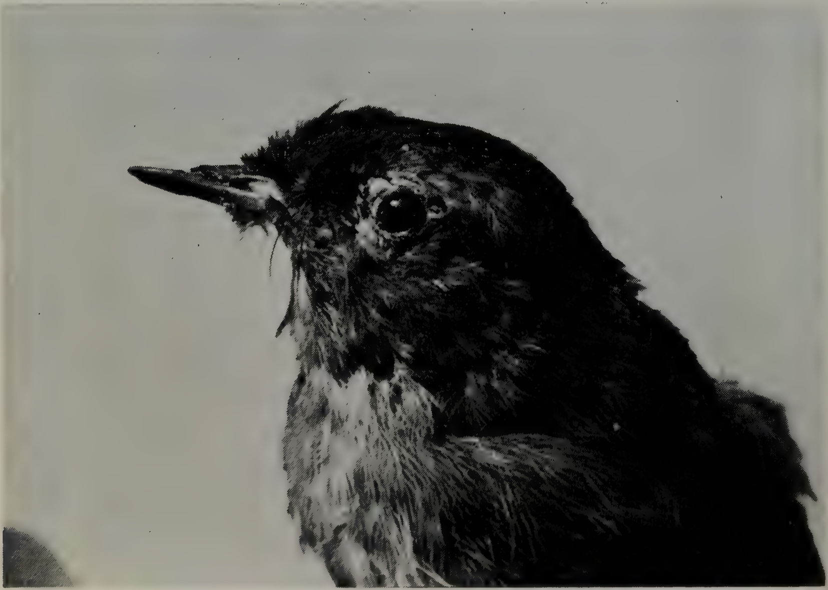
Fig. 1. (i) Left to right: *Larus relictus, ridibundus* (3), *ichtyaetus* (2), at Orok Nor, Mongolia, 28 April 1977.

(ii) (iii) Adult *relictus* in flight, Orok Nor, Mongolia, 28 April 1977.
Photographs by Alan Kitson



Above:
♀ Holotype of *Brachypteryx flaviventris* Salvadori (Museo Civico di Storia Naturale "G.Doria" Genoa, Italy); C.E. 26739; Sumatra, Mt. Singgalan, Bella Vista, 23rd July 1878, coll. O. Beccari.

Below:
Detail of the head.



"What is *Brachypteryx flaviventris* Salvadori?"

by Carlo Violani

Received 7 March 1980

Among the new birds collected by Odoardo Beccari in western Sumatra in 1878, Tommaso Salvadori briefly described *Brachypteryx flaviventris* from a unique ♀ specimen shot on Mt. Singgalan (Salvadori 1879: 226). Characteristics of this new species were given, as usual, in Latin:

> "*Supra brunnea; subtus flavescens, abdomine laetiore, lateribus et tibiis brunneis; fascia superciliari obsoleta flavescente; loris fuscis; rostro et pedibus fuscis.*" (In Sharpe's (1883) translation: "Above brown; below yellowish, the abdomen brighter; the sides of body and flanks brown; an obsolete superciliary streak of yellowish; lores dusky; bill and feet dusky.")

These were followed by measurements and by a brief statement, which, translated, reads:

> "Not unlikely this species is *Brachypteryx leptura* Kuhl, mentioned by Müller, *Tijdschr. Nat. Gesch. en Phys.* II, p. 330, 333, which I do not find described."

A few years later, dealing with the genus *Brachypteryx* in Volume 7 of *Cat. Birds Brit. Mus.* (1883: 25), R. B. Sharpe was unable to determine the systematic position of this form on the basis of Salvadori's description alone; neither was Chasen in 1935 (p. 232), who wondered in a footnote: "What is *Brachypteryx flaviventris* Salvadori, based on a single female from Mt. Singalang, Padang Highlands, Sumatra?".

The final answer to such a question could only come from actual re-examination of the holotype which is still preserved as a mounted specimen in the collections at the Genoa Museum of Natural History. It is a ♀, obtained and sexed by O. Beccari on Mt. Singgalan, Bella Vista, W. Sumatra, on 23 July 1878; MSNG C.E. 26739, Beccari's No. 203.

Measurements of Holotype (*in mm. Salvadori's figures in brackets*)

As usual, newly taken measurements differ slightly from those originally taken.

Total length: — (118); bill: half of the upper mandible is missing, a fact which was not stated by Salvadori; the lower mandible, intact, measures 16 mm, from tip to gape. Salvadori's measurement was 10 mm for the presumably intact bill; wing: 52 (50); tail: 49 (50); tarsus: 27 (25).

The identification of this bird being necessary for the preparation of the list of the Bird Types at Genoa Museum by Arbocco, Capocaccia & Violani (1979), the specimen was taken to Leyden Museum, where it was very kindly examined by Dr. G. F. Mees on 3 September 1979. As a start it was compared with all the possible likely material from Sumatra belonging to the genera *Prinia, Brachypteryx* and *Cettia.*

Prinia was at once rejected, on account of its totally different, slender body shape, general proportions and colouring. *Brachypteryx* was discarded as well; the rectrices of the Genoa holotype, though belonging very likely to an immature bird, were too long for a true, even adult *Brachypteryx,* which, in any case, besides the shorter tail, are larger in size as well as different in colour pattern.

Comparison with *Cettia* from Sumatra was most rewarding; the following 3 skin specimens of *Cettia montana sumatrana* O.-Grant were examined in comparison with the Genoa holotype:—

(1) adult specimen, unsexed, Gunung Talaman, N. W. helling, 2600 m, Ophir Distrikten, Sumatra; collected by E. Jacobson, 5. vi. 1917; No. 1057.

(2) adult ♂, Gunung Talaman, N. W. helling, 2200 m, Ophir Distrikten, Sumatra; collected by E. Jacobson, 15. vi. 1917; No. 1103.

(3) adult ♂, Dempu (Pasemah), 2200 m, Palembang, Sumatra; coll. by E. Jacobson, 25. viii. 1916; No. 718.

Except for its yellowish ventral hue, *B. flaviventris* agrees perfectly with these 3 individuals; besides the similar proportions of the body, feet and tail, the Genoa bird shares the same superciliary streak, the brown upperparts and the whitish lower mandible tipped with dark horn.

Cettia montana sumatrana was described in 1916 from a ♂ and a ♀ specimen collected by H. C. Robinson and C. B. Kloss at Korinchi Peak, 7000–11,000 feet, Sumatra, in 1914, and now preserved at Tring. In the original paper, an immature ♀ (undated, but same locality and collectors) was also mentioned, whose underparts, middle of breast and throat were said to be of a "yellowish white" colour (O.-Grant, 1916: 67). This specimen (B. Mus. 1920.6.29.465) was very kindly checked in 1979 by Derek Goodwin in Tring, at my request, and it has in reality "the throat yellowish rather than white and the central part of the belly lemon yellow", the very hue by which one would describe the Genoa bird.

Many juveniles of *Cisticola* and *Cettia* show an abdominal yellowish colour, which, in the case of *Cettia montana sumatrana,* changes into a whitish tinge in the adult plumage. C. W. & F. M. Benson have kindly examined (1980) material in the British Museum at my request and wrote to me: "In *Acrocephalus,* however, of the 28 species listed by Morony, Bock & Farrand (1975: 103–104), disregarding those confined to remote islands in the Pacific, the normal colour is usually buffy, and the only one showing yellow on the underparts was *A. orientalis*".

Hence, it appears that *Brachypteryx flaviventris* Salvadori is in reality an immature ♀ of the taxon subsequently described in 1916 under the name of *Cettia montana sumatrana* O.-Grant, but which, according to the priority law of nomenclature, should now be called *Cettia montana flaviventris* (Salvadori).

Acknowledgements: I am greatly obliged to Dr. G. F. Mees (Leyden Museum) for having so kindly examined and identified the specimen, and for revising the draft of my paper; to Derek Goodwin, for providing the data concerning *Cettia* in the Brit. Mus. Nat. Hist.; to C. W. & F. M. Benson for their constant help and guidance, and for kindly checking the *Acrocephalus* material in Brit. Mus. Particular thanks are due to Drs. G. Arbocco and L. Capocaccia of the Scientific Staff of Genoa Museum of Natural History for the loan of the unique Salvadori holotype.

References:

Arbocco, G., Capocaccia, L. & Violani, C. 1979. Catalogo dei Tipi di Uccelli del Museo Civico di Storia Naturale di Genova. *Ann. Mus. civ. St. Nat. Genova, 82:* 184–265.

Chasen, F. N. 1935. A Handlist of Malaysian Birds. *Bull. Raffles Museum, 11*, Singapore.

Morony, J. J., Bock, W. J. & Farrand, J. 1975. Reference list of the birds of the world. *Amer. Mus. Nat. Hist.,* New York.

Ogilvie-Grant, W. R. 1916. New Warbler from Sumatra. *Bull. Brit. Orn. Cl., 36*: 66–67.

Salvadori, T. 1879. Catalogo di una collezione di uccelli fatta della parte occidentale di Sumatra dal Prof. Odoardo Beccari. *Ann. Mus. civ. St. Nat. Genova, 14:* 169–253.

Sharpe, R. B. 1883. Catalogue of the Passeriformes or Perching Birds in the Collection of the British Museum. Vol. 7: Cichlomorphae: Part IV. Containing the concluding portion of the Family Timeliidae. London.

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The avifauna of Sulawesi, Indonesia: faunistic notes and additions

by C. J. Escott and D. A. Holmes

Received 30 October 1979

The Indonesian island of Sulawesi (Celebes) has an avifauna of c.328 species including c.74 endemics. The high number of endemics is a result of Sulawesi's long isolation and unique position along Wallace's line separating the Sunda and Sahul faunas. It is therefore not surprising that early workers often concentrated on its resident and forest birds. It appears that several quite common migratory birds have been overlooked in the past.

Few of the following species that we have added to the avifauna in the past 3 years are likely to be genuine new arrivals on the island. Over half these additional species are regular or at least occasional winter visitors to Australia that might reasonably be expected to occur on passage in Sulawesi and Wallacea generally (White 1975, 1976, 1977). One of the species reached Sulawesi as a result of an irruption, and 2 may have been introduced by Man. Probably only 3 are natural additions to the resident avifauna: *Ibis cinereus, Apus affinis* and *Cypsiurus balasiensis.*

The second part of this paper updates the range of several resident species that were known to Stresemann (1939–41) only from restricted parts of the island.

A number of records have been taken from the field notes of Dr. J. MacKinnon (J.M.) who was stationed in North Sulawesi with the Directorate of Nature Conservation of the Government of Indonesia. The authors are very grateful for Dr. MacKinnon's contribution and his assistance in reading a first draft of this report.

Pelecanus conspicillatus

The irruption of Australian Pelicans into Indonesia during the southern winter of 1978 has already been reported (Somardikarta & Holmes 1979). The main concentrations reported in Sulawesi consisted of 50 or more birds between Polewali (119° 20′ E, 3° 25′ S) and Majene and of over 100 in the Luwuk area (123° E, 1° S). DAH saw 4 near Palu (119° 50′ E, 0° 50′ S) in September and one on the Lariang (119° 20′ E, 1° 25′ S) in October, all of these being remnants of the flocks of 10–15 birds that had arrived 3 months previously. One was reported from Tanjong Panjang (121° 50′ E, 0° 30′ N) in North Sulawesi as late as 15 December 1978 (JM).

Ibis cinereus

Five Milky Storks near Maros, just north of Ujung Pandang (119° 30′ E, 5° 10′ S) on 10 June 1977 (CJE) were the first to be reported in Sulawesi.

Subsequently parties of 1–8 were seen on several occasions near Polewali, Ujung Pandang and Jeneponto (119° 45′ E, 5° 40′ S) in March and September 1978 and January 1979 (CJE, DAH). In S.E. Sulawesi they have been reported at Kolumbi in Roraya district (c.112° E, 4°S) on 6 August 1978 (Pranowo, pers. comm.), and in N. Sulawesi a party of c.15 birds was seen at Tanjong Panjang on 5–10 December 1978 (JM). Hitherto the Milky Stork was known in Indonesia only from Java and Sumatra and the origin of the small but apparently resident population in Sulawesi is not known.

Porzana paykullii

A single Band-bellied Crake was seen near Ujung Pandang on 7 April 1979 (CJE). Identification was confirmed at c.10 m by the chestnut forehead, brown crown and nape, red legs and greenish-grey bill. It was considerably larger than a *P. fusca* seen shortly afterwards; the red legs distinguish it from *Rallina eurizonoides* and the combination of chestnut forehead sharply demarcated from the brown crown and nape from *R. fasciata*.

The known wintering range of this crake includes the Malayan peninsula, Sumatra, Java and Borneo, as well as one record from Basilan Island in the southern Philippines (Delacour & Mayr 1946), so the present record represents only a slight extension of range.

Pluvialis squatarola

First recorded at Sigeri (119° 35′ E, 4° 40′ S) on 23 February 1977, the Grey Plover has subsequently been seen elsewhere along the west coast of South Sulawesi on several occasions between 13 January and 1 April (CJE) and 2 were seen at Palu on 24 September 1978 (DAH). It appears to be a regular winter visitor.

Limosa limosa

A flock of c.60 Black-tailed Godwits was seen near Ujung Pandang on 11 March 1978 (CJE). It is probably a rare visitor to Sulawesi.

Tringa stagnatilis

First sighted near Sigeri on 18 September 1976, the Marsh Sandpiper has since been found to be very common along the west coast of South Sulawesi between 18 September and 1 April (CJE). Several were also seen at Palu on 24 September 1978 (DAH).

Calidris canutus

A flock of 25 Red Knots was seen near Sigeri on 23 February 1977 (CJE). Identification was assisted by some rufous mottling on the underparts.

Calidris tenuirostris

13 Great Knots were seen near Ujung Pandang on 13 November 1977 (CJE) and another 3 were present at the mouth of the Morowali River in Central Sulawesi (121° 35′ E, 1° 55′ S) on 23 January 1979 (DAH).

Calidris ferruginea

One Curlew Sandpiper was seen near Ujung Pandang on 12 September 1976 and since then they have been seen regularly along the west coast of South Sulawesi up to 22 March, occasionally in flocks of up to 200 (CJE). One was seen at Palu on 24 September 1978 (DAH).

Crocethia alba

The first Sanderling record was of 2 on the beach near Ujung Pandang on 4 September 1976, and in subsequent years parties of up to 10 were seen there regularly until 1 April (CJE). Larger numbers were present at Palu on 18 October 1978 (DAH).

Philomachus pugnax

One Ruff, believed to be male, was present near Ujung Pandang on 3 December 1978 and again on 16 February 1979, and 12 were seen near Polewali on 16 March 1979 (CJE). The diagnostic white oval patches on the sides of the upper tail coverts were seen clearly.

Gelochelidon nilotica

Two Gull-billed Terns were seen on 1 February 1978 near Jeneponto (CJE) and subsequently small numbers were seen occasionally at several locations between Ujung Pandang and Bulukumba (120° 20′ E, 5° 30′ S) from 22 October until 28 April (CJE, DAH).

Streptopelia tranquebarica

On his first arrival in Palu on 18 September 1978 DAH heard the familiar call of the Red Turtle Dove, and he later confirmed this record by sightings. It was found to be a common and presumably resident bird in the Palu valley and was also heard on the opposite coast at Torue (120° 20′ E, 1° 00′ S). This species could have arrived unaided from its nearest known range in Luzon and Mindoro in the Philippines but it is more likely to have been introduced, and the lack of records from North Sulawesi (JM, CJE) would support this.

Hirundapus caudacutus

A party of probable White-throated Needletails was seen at Poso airport (120° 40′ E, 1° 25′ S) on 17 October 1978 (DAH). A second group of c.10 was seen flying southeast near Bulukumba on 22 October 1978 (CJE, DAH) and a single bird was seen near Malino (east of Ujung Pandang) on 1 April 1979 (CJE).

The white throat and vent were clearly seen, particularly in the second group, and this would appear to confirm the identification (King *et al.* 1975), but Mees (1973) shows that some specimens of *H. cochinchinensis* from Java are pale with distinctly white throats, so that identification from sight records may not be conclusive. However, whereas *H. cochinchinensis* is a winter visitor south to Malaya, Java and Sumatra only, *H. caudacutus* is a passage migrant through S.E. Asia to Australia and has been recorded from Borneo (Smythies 1960), and in the Lesser Sunda Islands (White 1976). Furthermore, Stresemann (1939–41) considered that this species probably occured over Sulawesi as a passage migrant.

Apus pacificus

Several Fork-tailed Swifts were seen near Takalar, south of Ujung Pandang, on 21 October 1978 (CJE, DAH) and identified from flight silhouette by DAH who knows this species from elsewhere in S.E. Asia. It has also been reported from Tangkoko Batuangus in N. Sulawesi (125° 20′ E, 1° 35′ N) at the end of August or early September 1977 (JM).

Stresemann included this migrant species in his nominal list (1936), possibly on the basis of the specimen listed by White (1976) from the Sangir Islands, but omitted it from his general work on mainland birds (1939–41). White also reported specimens from Flores and Halmahera.

Apus affinis

The House Swift is resident in Ujung Pandang in moderate numbers and a nest site was visited on 22 October 1978 (CJE, DAH) under second storey eaves in a busy central shopping street. Another population was found in a town 40 km north of Sigeri.

The known range of this Afro-Asian species extends as far as the northern Philippines and Greater Sundas, and the colonization of Ujung Pandang is probably part of a continuing range expansion and population explosion that has occurred since the species adopted man-made structures as nesting sites (Medway & Wells 1976). It may not be new to Ujung Pandang as White (1976) quotes 2 swifts seen on 1 September by Maurenbrechter (1948) which were assumed to be this species, although the identification was doubted by Coomans de Ruiter (1948).

Cypsiurus balasiensis

The Palm Swift was first positively identified by sight on 21 October 1978 (DAH) at several places between Ujung Pandang and Balukumba, in open country usually near Fan-leaf Palms *Borrassus flabellifera*, known locally as "pohon lontar". Identification was confirmed on 23 May 1979 when CJE found 2 nests, and possibly more, in a grove of these palms 2 km south of Jeneponto. The nests were 2 m and 4 m above the ground, lodged in the curled undersides of palm fronds, and one contained one or probably 2 fledgelings; the second was empty.

The Palm Swift occurs widely in the Greater Sundas and Philippines but this appears to be the first record from Wallacea.

Pycnonotus goiavier

Small groups of Yellow-vented Bulbuls are often seen in and around Ujung Pandang (first recorded 29 May 1977, (CJE) and, like *P. aurigaster*, have presumably originated from introduced stock.

Turdus obscurus

A flock of c.15 Eye-browed Thrushes was reported from Tangkoko Batuangus in the far north of Sulawesi on 8 April 1978 (JM). This record is a slight extension of its known wintering range in the Philippines and Greater Sundas.

In addition to the above species there are several unconfirmed sight records of the following which would also be additions to the avifauna of Sulawesi:

Charadrius alexandrinus: one, Ujung Pandang, 4 September 1976 (CJE); one, Palu, 24 September 1978 (DAH).
Gallinago stenura: several, Ujung Pandang, 7 April 1979 (CJE).
Calidris alpina: one, Ujung Pandang, 18 September 1976 (CJE); several, Palu, 18 October 1978 (DAH).
Glareola maldivarum: small flocks, Pangkajene (north of Ujung Pandang), 16 November 1977, and Jeneponto, 10 October 1978 (CJE).
Delichon dasypus: one, Palu, 11 October 1978 (DAH).

The following mainly resident species show an extension of their previously known range as recorded by Stresemann (1939–41); Stresemann's described range is shown in brackets against each species, but his terms are geographical and do not match Sulawesi's 4 administrative provinces:

Phalacrocorax sulcirostris: (North, 2 records). The Little Black Cormorant is quite common near Bulukumba in South Sulawesi, first recorded there on 10 April 1978 (CJE).

Phalacrocorax melanoleucos: (North). The Little Pied Cormorant is common near Bulukumba (first record 10 April 1978) and Polewali in South Sulawesi (CJE) and a single bird was seen near Palu in Central Sulawesi in September 1978 (DAH).

Egretta sacra: (North, and island of Muna) Small numbers of Reef Egrets have been seen at several localities in Central and South Sulawesi (CJE, DAH, and J. West).

Egretta alba: (North, and island of Muna). The Great Egret has also been seen at several localities in Central and South Sulawesi (CJE, DAH).

Ciconia episcopus: (North, Central, South-east, and island of Muna). The White-necked Stork is seen regularly in South Sulawesi (CJE).

Icthyophaga nana: (north-Central, South). The Lesser Fishing Eagle is present at Dumoga (124° 0′ E, 0° 40′ N) in North Sulawesi (JM).

Butastur liventer: (Central, South). The Rufous-winged Buzzard also is present at Dumoga in North Sulawesi (JM).

Gallinula chloropus: (Central, South). The Common Moorhen has been reported from several areas throughout North Sulawesi (JM).

Esacus magnirostris: (small off-shore islands). Stresemann (1936) listed the Reef Thick-knee as resident on small coastal islands, and omitted it from his general work on mainland birds (1939–41). It has now been seen on mainland beaches near Ujung Pandang in south Sulawesi (CJE) and west of Gorontalo (123° 10′ E, 0° 50′ N) in North Sulawesi (JM).

Geopelia striata: (south-Central, South). The introduced Peaceful Dove has been recorded at Gorontalo in North Sulawesi (JM).

Tanygnathus megalorhynchus: (small off-shore islands). The Great-billed Parrot was also listed by Stresemann (1936) but omitted from his main work (1939–41). CJE saw one bird at Mahavu Crater near Menado (124° 45′ E, 1° 30′ N) in North Sulawesi, and a small flock near Amurang, west of Menado, both in late June 1979.

Cacomantis merulinus: (Central, South, South-east). The Plaintive Cuckoo has been seen at Tangkoko Batuangus in North Sulawesi (JM).

Collacalia vanikorensis: (Central, South, South-east). Large numbers of Uniform Swiftlets were seen flying over Menado in North Sulawesi early on 26 June 1979 (CJE).

Halcyon sancta: (South). The Sacred Kingfisher, a migrant, has been recorded at Palu in Central Sulawesi in September 1978 (DAH) and at Tangkoko Batuangus in North Sulawesi (JM).

Merops ornatus: (South). The migratory Rainbow Bee-eater has also been seen at Tangkoko Batuangus as well as other sites in North Sulawesi (JM).

Lalage sueurii: (southern part of South). Sueur's Triller is now common in and around Palu town (DAH, and R. Watling) and probably in other locations in Central Sulawesi. It appears to be extending its range northwards, possibly in competition with *L.* (*nigra*) *leucopygialis*, but it has so far not been recorded in North Sulawesi (JM).

Cisticola juncidis: (Central, South). The Zitting Cisticola has been seen west of Gorontalo in North Sulawesi (JM).

Rhipidura teijsmanni: (western North, Central, South, South-east). The record from Ambang (124° 25′ E, 0° 45′ N) in North Sulawesi (JM) confirms that the endemic Celebes Fantail occurs in all parts of Sulawesi.

Anthus novaeseelandiae: (South). Richard's Pipit is reportedly widespread in North Sulawesi (JM).

Passer montanus: (Ujung Pandang in South). The spread of the introduced Tree Sparrow around Sulawesi is to be expected and it is now known from Menado in North Sulawesi (CJE) and Donggala, the port of Palu, in Central Sulawesi (DAH).

Lonchura punctulata: (Central, South). The Spotted Munia is reported to be widespread in North Sulawesi (JM).

References:

Coomans de Ruiter, L. & Maurenbrecher, L. L. A. 1948. Stadsvogels van Makassar (Zuid-Celebes). *Ardea* 36: 163–198.

Coomans de Ruiter, L. 1951. Vogels van het dal de Bodjo-rivier (Zuid-Celebes). *Ardea* 39: 261–318.

Delacour, J. & Mayr, E. 1946. *Birds of Philippines*. Macmillan: New York.

King, Ben., Woodcock, M. & Dickinson, E. C. 1975. *A Field Guide to the Birds of South-east Asia*. Collins: London.

Medway, Lord & Wells, D. R. 1976. *The Birds of the Malay Peninsula*. Volume V: Conclusion, and survey of every species. Witherby: London.

Mees, G. F. 1973. The Status of two species of migrant swifts in Java and Sumatra (Aves, Apodidae). *Zool. Meded.* 46: 197–207.

Smythies, B. E. 1960. *The Birds of Borneo*. Oliver & Boyd: Edinburgh and London.

Stresemann, E. 1936. A nominal list of the birds of Celebes. *Ibis* 78(2): 356–369.

Stresemann, E. 1939–41. Die vogel von Celebes. *J. Orn.* 87(3): 299–425; 88(1): 1–135; 88(3): 389–487; 89(1): 1–102.

White, C. M. N. 1975. Migration of Palearctic Waders in Wallacea. *Emu* 75: 37–39.

White, C. M. N. 1976. Migration of Palearctic non-passerine birds in Wallacea. *Emu* 76: 79–82.

White, C. M. N. 1977. Migration of Palearctic passerine birds in Wallacea. *Emu* 77: 37–38.

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Great Shearwater *Puffinus gravis* new to Mexico

by J. S. Ash and G. E. Watson

Received 26 November 1979

One of us (J.S.A.) found an entire, recently dead, shearwater, on the tide-line at Tulum (20° 13′ N, 87° 28′ W), on the east coast of Yucatan, Mexico, on 25 July 1978. As it was thought to be a Great Shearwater *Puffinus gravis*, a species previously unrecorded from Mexico, its head and a wing and leg were sent to the Smithsonian Institution. Examination by G.E.W. confirmed its identification on the basis of underwing pattern, bill size and colour, and the foot's proportions and colour.

The specimen (USNM 571206) consists of a skull, including the bill sheath and some skin and feathering together with 4 cervical vertebrae, a fully feathered left wing with the humerus broken just below the head, and a right foot with the lower end of the tibio-tarsus. The bill is entirely dark grey, the foot is creamy white with some dusky markings on the outer sides of the tarsus and toes. Although the outer two primaries are slightly beach worn, the other primaries are very fresh, indicating a bird of the year. All the measurements are small, suggesting a female (wing 311.5, exposed culmen 44, culmen from skull 54, skull length with bill sheath 96, skull width 31.5, tarsus 57.7, middle toe 63.2 mm).

In May the northward migration of juvenile Great Shearwaters begins from the breeding ground in the Tristan da Cunha group of islands in the middle of the south Atlantic Ocean (Voous & Wattel 1963). In the Atlantic, birds generally follow a westerly route northward around the horn of Brazil (Metcalf 1966) and cross the tropics rapidly, passing offshore along the coasts of the Guyanas (Mees 1976), Trinidad (Collins & Tikasingh 1974) and outer Lesser Antilles (Gibson, unpublished observations May and June 1965) on their way to winter quarters off the east coast of the United States and southern Canada. There are only 3 reliable records for the Caribbean (Gibson *in* Bond 1966, Phelps 1972) and few for the northern Gulf of Mexico. The latter, which extend west to Galveston, Texas, are summarized by Imhof (1977), supplemented by Arnold (1975) and Buhrman & Hopkins (1978). Many of these are autumn or winter records rather than northward migrants in May or June.

Many of the distributional records of this species are based on beach kills (Watson 1970, Mees 1976), as in this case, which is the first record of a Great Shearwater from anywhere in Mexico. It is only recently, as more observers have made trips offshore, that many migrants have been observed moving at sea.

References:

Arnold, K. 1975. First record of the Greater Shearwater from the Gulf of Mexico. *Auk* 92: 394–395.

Bond, J. 1966. Eleventh supplement to the *Check-list of Birds of the West Indies (1956)*. Academy of Natural Sciences: Philadelphia.

Buhrman, C. B. & Hopkins, L. A. 1978. Eleven pelagic trips into the eastern Gulf of Mexico. *Florida Field Naturalist* 6: 30–33.

Collins, C. T. & Tikasingh, E. S. 1974. Status of the Great Shearwater in Trinidad, West Indies. *Bull. Brit. Orn. Cl.* 94: 96–99.

Imhof, T. A. 1977. The Greater Shearwater in the northern Gulf of Mexico. *Auk* 94: 163–164.

Mees, G. F. 1976. Mass mortality of *Puffinus gravis* O'Reilley on the coast of Suriname (Aves, Procellariidae). *Zool. Med.* 49: 269–271.

Metcalf, W. G. 1966. Observations of migrating Great Shearwaters *Puffinus gravis* off the Brazilian coast. *Ibis* 108: 138–140.

Phelps, W. J. Jr. 1972. Adiciones a las listas de aves de Sur America, Brasil y Venezuela y notas sobre aves Venezolanas. *Bol. Soc. Venez. Cienc. Nat.* 30: 23–40.

Voous, K. H. & Wattel, J. 1963. Distribution and migration of the Greater Shearwater. *Ardea* 51: 143–157.

Watson, G. E. 1970. A shearwater mortality on the Atlantic coast. *Atlantic Nat.* 25: 75–80.

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Records of rare or previously unrecorded birds from Colombia

by Michael Gochfeld, Stuart Keith, Paul Donahue

Received 15 December 1979

During a month-long visit to Colombia, January–February 1977, M.G. and S.K. were impressed by the large number of birds observed for which there were no previously published Colombian records. These records were primarily of waterbirds observed incidentally while travelling from one forest or fauna to another, and were not the results of a planned search or survey. Combined with records obtained by P.D. during more extensive field work a clearer picture has emerged concerning the status and regularity of certain species. Clearly much remains to be discovered about the birds of coastal Colombia, and visitors interested mainly in seeing Neotropical exotics and Colombia endemics, are urged not to overlook the more familiar gulls and terns.

Most of the records reported here are from the Caribbean coast between Baranquilla and Santa Marta, from the harbour at Cartagena, and on the Pacific Coast from the harbour at Buenaventura. Very few, if any, are surprising, nearly all representing species already recorded from the waters of adjacent countries or known to be extending their ranges.

NON-RESIDENT SPECIES

Dichromanassa rufescens *Reddish Egret*

M.G. and S.K. observed a white-phased bird feeding in mangroves near the town of Cienaga, 1 km west of the inlet to Cienaga Grande on 19 January. The species was not known from Colombia until 1974 when P.D. discovered it at Isla Salamanca (Donahue 1977). He observed several individuals during a series of visits between 30 June and 19 August and also found 4 on the Guajira peninsula on 7 August. Over 100 (both colour phases) were seen at the Manaure salt works on the Guajira Peninsula, 26–27 June 1974 (Alexander Sprunt IV). The species has been recorded in Colombia in January, June, July and August, so it may well be resident (rather than just a casual wanderer), particularly on the Guajira. It has been considered a winter resident (August–May) on the coast of Venezuela and the Netherlands Antilles (Meyer de Schauensee *et al.* 1978). Whether it has recently spread to Colombia from Venezuela or was simply undetected in the past, is not known.

Stercorarius sp. *Parasitic(?) Jaeger*

P.D. observed 2 immature jaegers in Santa Marta harbour, 3 July 1974. M.G. and S.K. observed an immature bird, lacking elongated central tail feathers, in Cartagena harbour, 21 January 1977. Young jaegers are notoriously difficult to identify, but the slender proportions and small size (the bird in Cartagena was the size of the Laughing Gulls *Larus atricilla* with which it was seen) rule out Pomarine Jaeger *S. pomarinus.* The Long-tailed Jaeger (*S. longicaudus*) is chiefly an offshore bird, so Parasitic Jaeger *S. parasiticus* is most probable. The species is not yet reported from Venezuela (Meyer de Schauensee *et al.* 1978), but E. Eisenmann has examined 3 specimens from the Pacific coast of Panama which he identified as first or second year Parasitic Jaegers, using the criteria of Walter (1962). Walter showed that earlier published sight records of both Parasitic and Long-tailed Jaegers from the Caribbean coast of Panama, based on criteria currently used for separating the two, both in the field and in the hand, were unreliable.

STERCORARIUS POMARINUS *Pomarine Jaeger*

Denham (1972) reports seeing a Pomarine Jaeger in Cartagena harbour in February 1972. P.D. observed this species on 7 dates between 3 and 31 July 1974 in Santa Marta harbour with a maximum of 8 on 3 July (with 2 probable immature Parasitic Jaegers – see above), all in immature plumage. Meyer de Schauensee *et al.* (1978) consider this species common in winter off the Venezuelan coast (December to March, with one September occurrence), but the July dates are of unusual interest.

LARUS ARGENTATUS *Herring Gull*

Donahue (1977) reported an immature at Isla Salamanca, 20 January 1975. M.G. and S.K. observed at least 3 in the uniform mottled pale-brown second winter plumage, near the docks and in the harbour at Cartagena, 21 and 22 January 1977. This species is continuing to extend its breeding range southward in North America and has recently increased during the winter in the West Indies (Buckley & Buckley 1970) and in Panama (Wetmore 1965), from where Wetmore lists 3 ringing recoveries, all of first winter birds, while E. Eisenmann notes that there are other sight records from both coasts of Panama.

In addition we find the following records for South America:—
a second year bird on Trinidad, 1959 (ffrench 1973); a specimen taken on Isla de Aves off the coast of Venezuela (Meyer de Schauensee *et al.* 1978); a sight record for Los Roques off the Venezuelan coast (Meyer de Schauensee *et al.* 1978); a first year bird seen on Trinidad, 3 October 1976 (Fisher 1978). In view of these records and the 2 recent reports for the Caribbean coast of Colombia, we anticipate more frequent records in northern South America in the near future.

GELOCHELIDON NILOTICA *Gull-billed Tern*

P.D. found this species fairly common at Isla Salamanca, June–August 1974 and in January 1975 (25–200 individuals) (see also Donahue 1974). M.G. and S.K. did not find it on the Caribbean coast in 1977, but saw one in Buenaventura harbour, 4 February. It was among Sandwich Terns *Sterna sandvicensis*, from which it was readily distinguished by shape, plumage, and heavy bill. Steve Hilty saw 3 there, 19 June 1975. These are the first published records of the species for Colombia, although it may breed on the coast of Ecuador (Meyer de Schauensee 1970), has recently been seen with increasing frequency along the coast of Peru (Plenge 1974), and is regular on both coasts of Panama (Ridgely 1976).

STERNA DOUGALLII *Roseate Tern*

P.D. observed 4–6 individuals at Isla Salamanca, 14 January 1975. M.G, and S.K. saw at least one and probably two in Cartagena harbour, 21 January 1978. The birds stood out from the numerous Common Terns in the harbour by their pure white underparts and very pale upperparts, by the reduced amount of black in the primaries, and by the longer tail streamers. The only previous record for Colombia is of a bird banded as a chick at

Great Gull Island, New York on 8 August 1969 and recovered on Gorgona Island, 28 km off the Pacific coast of Colombia, 27 October 1969 (Hays 1971). The species winters mainly on the Caribbean coast of Venezuela, off the Guyanas and off Trinidad (ffrench 1973). It breeds on islets off the coast of Venezuela (Meyer de Schauensee *et al.* 1978) and also in the Caribbean (James Bond).

STERNA ANAETHETUS *Bridled Tern*

P.D. observed 30 on 3 July 1974 and 35 on 18 July 1974 feeding around a large rock in the harbour at Santa Marta. M.G. and S.K. saw one in Cartagena harbour on 21 January. These are the first records from the Caribbean coast of Colombia. It is known from the Pacific coast (Meyer de Schauensee 1964) and breeds on islands off the Venezuelan coast and on Aruba and Curacao (Meyer de Schauensee *et al.* 1978).

STERNA SANDVICENSIS *Sandwich Tern*

At Isla de Salamanca, P.D. saw up to 10 on 24 and 26 December 1972, one on 14 January and several on 20 January 1975. M.G. and S.K. observed 2 typical Sandwich Terns in Cartagena harbour, 21 January 1977, and with others saw 5 in Buenaventura harbour, 4 February. A Sandwich Tern banded on Cape Hatteras, North Carolina, 8 June 1975, by Jay Sheppard was recovered alive and released near Buenaventura, 29 March 1976 (W. Brown and S. Hilty). The Sandwich Tern has not been recorded previously from the Pacific coast of Colombia, but is regular off Ecuador (Meyer de Schauensee 1966) and off the Pacific coast of Panama (Ridgely 1976) and has been photographed on the Atlantic coast of Panama (E. Eisenmann). There are increasing numbers of records from the Peruvian coast throughout the year and P.D. obtained counts of up to 100 Sandwich Terns at Paracas Bay in January.

STERNA SANDVICENSIS EURYGNATHA *Cayenne Tern*

This "species" is now often treated as a subspecies of the Sandwich Tern, with which it apparently freely interbreeds (Ansingh *et al.* 1960, Voous 1968), and M.G. has seen mixed pairs in Argentina. In the Netherlands West Indies, variation in bill colour is apparently continuous (Ansingh *et al.* 1960) from typical Sandwich (black with yellow tip) to all yellow-orange, and it is probably more appropriate to consider the pure yellow-billed "Cayennes" as a somewhat localized colour-type rather than a subspecies. If the two extreme forms (Sandwich and Cayenne) are found to be more common than predicted on the basis of random interbreeding, it would be appropiate to consider these as two morphs with much interbreeding.

M.G. and S.K. saw 2 birds with black and yellow bills intermediate between Cayenne and Sandwich types in Cartagena harbour, 21 January, in the company of 2 typical Sandwich Terns. Of greater interest was a nearly typical Cayenne (with only a trace of blackish on the lower mandible) in Buenaventura harbour, 4 February, seen with 5 typical Sandwich Terns. This is the first record of this variant for the Pacific coast of South America.

TACHYCINETA BICOLOR *Tree Swallow*

P.D. observed 50–100 on Isla Salamanca, 20 January 1975. M.G. and S.K. saw 6 there, 15 January 1977, and S. Hilty and P. Alden c.10 at Riohacha 15 February 1978. Meyer de Schauensee (1964) lists only one previou

Colombian record, from the Department of Nariño, and his only other records for South America (1970) are from Guyana and Trinidad. M.G. saw flocks totalling over 100 Tree Swallows at Chichiriviche, Falcon, Venezuela, 24 January 1974, and the species occurs there quite regularly in winter (Peter Alden). This constitutes the first published record for Venezuela, since Meyer de Schauensee *et al.* (1978) do not list it at all. The species is now known to migrate through coastal Peru (at least occasionally) and to winter as far south as Salta, Argentina (Gochfeld *in prep.*). Tree Swallows occur irregularly on the Caribbean coast of Panama (E. Eisenmann).

TACHYCINETA sp.

At Isla Salamanca on 15 and 19 January 1977, M.G. and S.K. found flocks of up to 40 swallows with blue-green backs and white rumps which were believed to be Mangrove Swallows *Tachycineta albilinea*, but the fine white loral mark could not be discerned. P.D. also had observed several probable Mangrove Swallows there, 24 December 1974. Confusion could exist with the White-rumped Swallow *T. leucorrhoa* of Bolivia, Paraguay, Uruguay, Brazil and Argentina, and the Chilean Swallow *T. leucopyga* of southern Chile and Argentina, but these 2 species would normally be on their southern breeding grounds during the austral summer. Although there are no records of these species north of Brazil, several *Tachycineta* sp. have been seen in Surinam in March (T. Davis). The Mangrove Swallow is not reported from Colombia or Northern South America, but is locally common in Pacific lowlands of Panama (Ridgely 1976) and a race breeds on the coast of northern Peru (Meyer de Schauensee 1970). Although the birds seen in Colombia and Surinam remain unidentified, it is certain that *Tachycineta* swallows are occurring there and merit close attention.

PROGNE sp. *Purple Martin*

P.D. observed up to 3 adult male Purple Martins on 22 July and 1 August 1974 at Santa Marta, a single on 1 August 1974 at Cienaga, another on 12 August 1974 at Isla de Salamanca and another on 6 August 1974 at Riohacha. The dates suggest they were of the migratory race *elegans* of the southern species, *P. modesta*, which occasionally reaches Panama at that season (E. Eisenmann; Ridgely 1976), but specimens of the Northern Purple Martin *P. subis* have been obtained from Panama in August, and as adult males of the 2 species are not separable in the field (E. Eisenmann) the identity of the Colombian martins remains uncertain.

DENDROICA VIRENS *Black-throated Green Warbler*

P.D. observed one above Bogota at Quebrado del Chico (now a housing development), 28 January 1973. M.G. and S.K. saw 5–6 on 16 and 17 January in the Santa Marta mountains near San Lorenzo between 1650 and 2300 m altitude. The only previous record from Colombia is also from the Santa Marta range, a bird obtained at Cincinati (about 1200 m altitude) in April (Meyer de Schauensee 1966). A bird was recently recorded in coastal Zulia, Venezuela (Meyer de Schauensee *et al.* 1978), but the species is otherwise unknown in South America.

SOUTH AMERICAN RESIDENT SPECIES

DENDROCYGNA BICOLOR *Fulvous Whistling Duck*

P.D. saw 22 at Isla Salamanca, 18 July 1974, and 6–10 there, 20 January

1975. The species is otherwise not recorded from the Caribbean coast of Colombia (see Meyer de Schauensee 1970).

ELANOIDES FORFICATUS *Swallow-tailed Kite*

P.D. saw 5 on 26 July 1974 at Parque Tayrona, east of the city of Santa Marta. It is not known to breed in Caribbean Colombia.

COCCYZUS LANSBERGI *Grey-capped Cuckoo*

With others, M.G. and S.K. saw one of this little known species near the hydroelectric plant at Yatecuy, Rio Anchicaya, Department of Valle, on the Pacific slope of the western Andes, 3 February 1977. This bird, which may have been a migrant (Koepcke 1964), was c.600 km southwest of its known range (Meyer de Schauensee 1964). It was sitting c.3 m up in a small tree at the edge of a clearing in wet tropical forest, not in "scrub" as listed by Meyer de Schauensee (1964).

CHAETURA BRACHYURA *Short-tailed Swift*

P.D. observed this species on 20 January 1975, 30 June and 18 July 1974 at Isla Salamanca. It is known from southern Colombia, but these are the first records from the Caribbean coastal region. In Panama it is now recorded with increasing frequency (Ridgely 1976) and has been found breeding by E.S. Morton (per E. Eisenmann).

LEPIDOPYGA LILLAE *Sapphire-bellied Hummingbird*

This is a "hyperendemic" species known only from mangroves near the mouth of the Magdalena River at Cienage Grande and rarely seen. P.D. identified 2 in mangroves at a new locality at the mouth of the Rio Rancheria, just east of the town of Riohacha, 6 August 1974.

MOLOTHRUS ARMENTI *Bronze-brown Cowbird*

This species was believed to be an extremely rare form from the Amazonian area near Leticia (Meyer de Schauensee 1970), apparently because the few known individuals arrived with specimens from Leticia. It is now clear that the species resides in coastal Colombia between Cartagena and Isla Salamanca. P.D. observed it on at least 5 visits to Isla Salamanca. It needs to be distinguished from the more abundant Shiny Cowbird *M. bonariensis*, and from the Bronzed Cowbird *M. aeneus* which breeds in the Canal Zone (E. Eisenmann) and which may be invading Colombia from nearby Panama. E. Eisenmann suggests that in the light of specimens sent by the late Armando Dugand, *armenti* and *aeneus* are best treated as conspecific, as they were by Blake (1968).

Acknowledgements: Peter Alden, Ken Berlin, Michel Kleinbaum, Lee Morgan and Guy Tudor accompanied M.G. and S.K. in the field at Buenaventura and Anchicaya. We thank William Brown, Steven Hilty, Robert Ridgely and Eugene Eisenmann for numerous valuable discussions concerning the status of birds in Colombia, Panama and adjacent parts of northern South America.

References:

Ansingh, F. H., Koelers, H. J., van der Weft, P. A. & Voous, K. H. 1960. The breeding of the Cayenne or Yellow-billed Sandwich Tern in Curaçao in 1958. *Ardea* 48: 51–65.

Blake, E. R. 1968. Family Icteridae, pp. 138–202, in *Check-list of Birds of the World* vol. 14. Museum of Comparative Zoology: Cambridge, Mass.

Buckley, P. A. & Buckley, F. G. 1970. Notes on the distribution of some Puerto Rican birds and on the courtship behaviour of White-tailed Tropic birds. *Condor* 72: 483–486.

Denham, R. 1972. Quetzalitis, Part one. *Linnaean News-Letter* vol. 16, no. 7.

Donahue, P. J. 1977. Reddish Egret and Herring Gull in Caribbean Colombia. *American Birds* 31: 286.

ffrench, R. P. 1973. *A Guide to the Birds of Trinidad and Tobago*. Livingston Publishing Company: Wynnewood, Pa.

Fisher, D. J. 1978. First Record of Black-headed Gull *Larus ridibundus* and third record of Herring Gull *Larus argentatus* for South America. *Bull. Brit. Orn. Cl.* 98: 113.

Hays, H. 1971. Roseate Tern, *Sterna dougallii*, banded on Atlantic Coast recovered on Pacific. *Bird Banding* 42: 295.

Koepcke, M. 1970. *The Birds of the Department of Lima, Peru*. Livingston Publishing Co: Wynnewood, Pa.

Meyer de Schauensee, R. 1964. *The Birds of Colombia*. Livingston Publishing Co: Wynnewood, Pa.

Meyer de Schauensee, R. 1966. *The Species of Birds of South America, with their Distribution*. Livingston Publishing Co: Wynnewood, Pa.

Meyer de Schauensee, R. 1970. *A Guide to the Birds of South America*. Livingston Publishing Company: Wynnewood, Pa.

Meyer de Schauensee, R., Phelps, W. H. & Tudor, G. 1978. *A Guide to the Birds of Venezuela*. Princeton Univ. Press: Princeton, NJ.

Plenge, M. 1974. Notes on some birds in west-central Peru. *Condor* 76: 326–330.

Ridgely, R. 1976. *A Guide to the Birds of Panama*. Princeton Univ. Press: Princeton NJ.

Voous, K. 1968. Geographical variation in the Cayenne Tern. *Ardea* 56: 184–187.

Walter, H. 1962. Vergleichende Untersuchungen an den Raubmowen *Stercorarius parasiticus* und *longicaudus*. *J. fur. Orn.* 103: 166–179.

Wetmore, A. 1965. *The Birds of the Republic of Panama*. Part 1. Smithsonian Institution: Washington, D.C.

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The Forest Wagtail *Motacilla indica* recorded in Nepal

by Kai Curry-Lindahl

Received 18 February 1980

While visiting the Royal Chitwan National Park in southern Nepal, I got an excellent view for several hours of a Forest Wagtail *Motacilla indica* on 30 November 1979, apparently the first record for Nepal.

The bird visited a sand bank in the Rapti River in the northeastern part of the National Park and close to its Headquarters and Research Station. This temporary sand bank was located near the southern shore of the river and partially connected with a small grass covered island. No vegetation covered the bank. Other birds feeding simultaneously on the bank were Indian White Wagtails *M. alba dukhunensis* and White-faced Pied Wagtails *M. a. leucopsis*, as well as Little Ringed Plovers *Charadrius dubius*, a Kentish Plover *C. alexandrinus* and a Greenshank *Tringa nebularia*.

The double black gorget and the beige colour above are diagnostic for the Forest Wagtail. Although a typical wagtail in structure and movements this species nevertheless resembles in colour the Ringed and Kentish Plovers in winter plumage, the upper parts of all 3 species being an almost identical light brown in colour. All 3 species could on several occasions be focussed simultaneously with binoculars. It was striking how similar they were, resembling the sandy ground on which they were feeding. The head and dorsal colour of the Forest Wagtail is very well illustrated in Ali (1977), but less well in other handbooks.

The Forest Wagtail observed in Chitwan kept invariably to itself while searching for food and mingled only occasionally with the other birds. It was observed on the sand bar from the morning to the late afternoon of 30 November but was not present there on the preceding and following days; nor was the species observed in other areas of the Royal Chitwan National Park which I visited 19–21 November and 28 November to 1 December.

The species is characterised as a "woodland bird" by several handbooks referring to the winter range of the species (Delacour & Mayr 1946, Delacour 1947, Ali & Ripley 1973). The vegetation-less sand bar in the Rapti River was surrounded by water. The nearest mainland shore consisted of grassland and a bit farther away of riverine forest.

The Forest Wagtail breeds in eastern Asia from eastern Siberia, Sakhalin, Korea and Manchuria to China and, in addition, in an isolated range in northwestern Burma and Assam (Ali & Ripley 1973, McClure 1974, Cheng 1976). It winters mostly in southern China, Indochina, Thailand, Malaysia and Indonesia, and it is an occasional visitor in the northern Philippines. In the eastern Himalayas it is a straggler or scarce passage migrant (Ali 1977), It has reached Kashmir once but not Nepal and Sikkim (Fleming *et al.* 1979). However, Ali & Ripley (1973) state that this species has been recorded on passage in Sikkim both in spring and autumn. A map in McClure (1974) includes Nepal in the winter range but is not supported by data.

According to Ali & Ripley (1973) the Forest Wagtail arrives in its winter quarters in the third week of September. There are several passage records elsewhere in October but none in November, so that the Chitwan individual in late November appears to be exceptional both in time and space.

References:

Ali, S. 1977. *Field Guide to the Birds of the Eastern Himalayas.* London and New York.

Ali, S. & Ripley, S. D. 1973. *Handbook of the Birds of India and Pakistan.* Vol. 9. Bombay, London and New York.

Cheng, T. H. 1976. *The Birds of China.* Peking.

Delacour, J. 1947. *Birds of Malaysia.* New York.

Delacour, J. & Mayr, E. 1946. *Birds of the Philippines.* New York.

Fleming, R. L. Sr., Fleming, R. L. Jr. & Bangdel, L. S. 1979. *Birds of Nepal.* 2nd ed. Kathmandu.

McClure, H. E. 1974. *Migration and Survival of the Birds of Asia.* Bangkok.

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Some observations of birds in northwestern Tripolitania 1948–9

by J. G. Parker

Received 4 March 1980

Bundy (1976) cites me for the only definite record of the Redwing *Turdus iliacus* in Libya (Parker 1950). I was stationed at Sabratha, western Tripolitania from 16 Dec 1948 to 5 Sep 1949 and I now realise that the following notes may also be of more than personal interest.

I have followed the sequence and nomenclature adopted by Bundy and, for convenience, cited for each species the number and abbreviation for status he gives. Apart from personal observations, all information is derived from Bundy unless another author is quoted.

Except for the coastal strip Pisida to Misurata, I had no opportunity to make observations except within the area east of Zuara (30 miles west of Sabratha), west of Tripoli and north of the 500m contour in the Jebel. Two species, the Andalusian Hemipode *Turnix sylvatica* (84) and Streaked Scrub Warbler *Scotocerca inquieta* (248), whose status in this area is doubtful, were not observed.

3. *Podiceps nigricollis* Black-necked Grebe WV

c. 50 (one shot) on a flooded salt-flat west of Sabratha, 26 Dec, following severe gales some days before. All other records were maritime, with maximum of up to 50 in Tripoli Harbour.

36. *Anser anser* Grey-lag Goose AV

5 at 6 miles east of Sabratha, on a salt-flat, allowed an approach to within 100 yards, 1 Jan. Not previously recorded in Tripolitania.

50. *Aquila chrysaëtos* Golden Eagle (WV) RB?

A sub-adult half way between Azizia and Jefren at Bir el Gnrem, 7 Aug.

59. *Circus cyaneus* Hen Harrier (PV)

A male seen at close range Sabratha, 4 Apr. One previous record.

79. *Falco subbuteo* Hobby PV CB

One in trees east of Sabratha on the early date of 6 Feb.

83. *Coturnix coturnix* Common Quail PV

Heard frequently and seen occasionally round Sabratha, 20 Mar to end Apr. C/8 found 13 Apr. Witherby *et al.* state the species breeds Morocco to Egypt, while Etchécopar & Hüe (1967) say "not definitely" in Libya. Bundy does not refer to even occasional or casual breeding.

149. *Chlidonias leucopterus* White-winged Black Tern PV

A juvenile flying south over a wadi near Garian, 15 Aug; following recent rains the wadi contained isolated pools of water. All other records refer to the coastal strip.

166. *Clamator glandarius* Great Spotted Cuckoo AV

One probable east of Tripoli, 19 Feb. This bird, seen perched on a telegraph wire, had a crest, a long tail and slim build. The identification was considered doubtful because of the date and because the bird appeared smaller than I supposed the species to be. Etchécopar & Hüe (1967) suggest that the species winters in Egypt and Morocco, and Bannerman (1955) records it in a latitude north of Tripoli on 17 Feb. On first seeing juveniles of the species in Portugal I was surprised at how inappropriate the adjective "great" seemed.

167. *Cuculus canorus* Cuckoo (PV)

One Sabratha, 13 Apr. One, dark brown, presumably a female in hepatic plumage, Sabratha, 14 Apr.

176. *Apus affinis* House Swift PV

178. *Apus melba* Alpine Swift MB PV

Both species seen in "some numbers" at Wadi Chafalla, near Jefren, 6 Aug. My impression was that I was watching birds from nearby breeding colonies, though there is no evidence of either species breeding in Tripolitania.

267. *Luscinia svecica* Bluethroat (PV)

At least two females Sabratha 19–21 Mar. A white spotted male, 22 Mar. None of the other 13 records for Libya, including those of Willcox & Willcox (1978), was of the white spotted form.

282. *Saxicola rubetra* Whinchat PV

1–2 at Sabratha, 17 Dec to mid Jan. Not seen between 17 Jan and 27 Mar, when the first spring migrant was observed. Not usually seen in winter.

284. *Turdus iliacus* Redwing AV

Besides my single record of a bird in trees near the museum at Sabratha' 12 Feb, Willcox & Willcox (1978) record Redwings in mixed flocks of thrushes, Jan & Feb 1970.

291. *Emberiza caesia* Cretzschmar's Bunting AV

At least 2 in a party of 4–6 buntings near Sabratha, 17 Apr. The head colour, "grey blue not grey green", was diagnostic of *E. caesia*. The possibility that others in the party were Ortolans *E. hortulana* cannot be excluded. Only one previous record for Libya, in Cyrenaica.

References:

Bundy, G. 1976. *The Birds of Libya.* B.O.U. Check List No. 1. The British Ornithologists Union.

Bannerman, D. A. 1955. *Birds of the British Isles.* Vol IV: 142–151. Oliver & Boyd.

Etchécopar, R. D. & Hüe, F. 1967. *Birds of North Africa.* Oliver & Boyd.

Parker, J. G. 1950. Eton Coll. Nat. Hist. Soc. Report 10 (1939–50): 43–47.

Willcox, D. C. R. & Willcox, B. 1978. Observations of Birds in Tripolitania, Libya. *Ibis* 120: 329–333.

Witherby, H. F., Jourdain, F. C. R., Ticehurst, N. F. & Tucker, B. W. 1938–41. *The Handbook of British Birds.* Vol 5: 250–254. Witherby: London.

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The first and second records of the Short-Tailed Shearwater *Puffinus tenuirostris* for the Malay Penisula and other *Puffinus* records

by P. R. Colston

Received 1 December 1979

A live example of the Short-tailed Shearwater *Puffinus tenuirostris*, more commonly referred to as the Tasmanian "Mutton-bird", was hand caught by a local fisherman from the sea surface at midnight near Koh Mai Torn Island, off Phuket Island, W. Peninsula Thailand on 2 May 1977. Mr. C. B. Frith prepared a skin of the bird and kindly presented it to the British Museum (Nat. Hist.) – BMNH Reg. No. 1979.6.1. He states that a second bird of this species was caught at the same locality in similar fashion on 10 May 1977. These are the first and second records for the Malay Peninsula.

The BMNH bird is a ♀ measuring approximately 340 mm in length, wing 258 mm, tail 83 mm, culmen 32 mm, tarsus 52 mm, middle toe and claw 63 mm. Its skull is fully ossified. The plumage is wholly dark brownish-black above, with black wing and tail quills, slightly paler below with greyish under-wing coverts; tail short and rounded. The slender beak is leaden grey; tarsus blackish-grey to purple-grey, claws lead-grey.

This shearwater breeds only in Australia and the Tasmanian islands. It is a trans-equatorial migrant, whose migration route has been determined from sight and specimen records, confirmed by recoveries of ringed birds (Serventy *et al.* 1971). Young birds start their migration in the latter part of April or early May. Breeders and immatures fly quickly northwards across the Equator into the North Pacific and Arctic Oceans. During June–August the main wintering area is in southern Kamchatka, the Aleutians and the Arctic Ocean to 71° N.

The occurrence of *Puffinus* spp. in the Malacca Straits is, according to Medway & Wells (1976), limited to one record, by Allen, of a group of medium-sized, dark shearwaters with graduated tails, tentatively identified as *P. pacificus* or *P. carneipes*. These were seen on 4 August 1950 at the north end of the Malacca Straits (6° N, 98° E). On 10 July 1963, when I was returning from Australia to the U.K. I identified 15 Wedge-tailed Shearwaters *P. pacificus* in approximately the same area at the north end of the Malacca Straits. In my field notes I noted at the time (0830–0930, sea rough with squalls) that they were narrow-winged medium-sized *puffinus*, dark chocolate brown above and below (one or two pale phase birds were also present). I had close views of several and identified them as *P. pacificus* by their long wedged-shaped tails, slender dark bills and their lighter build compared with either *P. tenuirostris* or the larger Pale-footed Shearwater *P. carneipes*. Several more Wedge-tailed Shearwaters were encountered later in the day further northwest in the Andaman Sea. The first Pale-footed Shearwaters were sighted 6 days later in rough seas on 16 July near Bombay. I know all 3 species well from earlier voyages or in the vicinity of their breeding grounds around Australia in subsequent years.

The interesting presence of *P. tenuirostris* during May in Thai-Malay waters may indicate that small numbers pass undetected through the South China sea on their way north, possibly becoming displaced by storms together with other widely ranging Australian *Puffinus* species. On the other hand they may be first-year birds which become "lost" and attach themselves to migrating flocks of Pale-footed Shearwaters.

Serventy *et al.* (1971) cite 2 individuals obtained in the northern Indian Ocean in Pakistan and Sri Lanka, both in May.

References:
Allen, E. F. 1951. Two new birds in the Straits of Malacca. Malay Nat. J. 5: 155–157.
Medway, Lord & Wells, D. R. 1976. *The Birds of the Malay Peninsula.* V. Conclusion and Survey of every species. Witherby: London.
Serventy, D. L., Serventy, V. S. & Warham, J. 1971. *The Handbook of Australian Sea-birds.* Reed: Sydney.

Address: P. R. Colston, British Museum (Natural History), Tring, Herts, England.

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IN BRIEF

Mr H. G. Alexander writes commendably "in the interest of truth":—

'On page 8 of the centennial *Bulletin,* Mr Peal, telling of the curiously hesitant steps by which women were admitted to the Club, notes: "However, at the Meeting on 15 March 1911 Miss E. L. Turner is shown as a Visitor – one hopes she was allowed at the dinner first but that is not stated. She showed 34 slides and her presence must have been arranged well in advance; she came again in 1912". Well, the fact is she was *not* allowed to come to the dinner. She was a close neighbour of mine in Kent, and I knew her very well. In protest at the strange behaviour of the BOC officers, I went with her to get dinner somewhere else, and later we arrived at the restaurant (Pagani's, if I remember right), where we met the Duchess of Bedford, who was Miss Turner's personal friend (the only time I met her, as far as I can recollect); and the three of us remained in some ante-room till the men had finished their dinner – at least fifteen or twenty minutes, I think.'

25 May 1980 275 Crosslands, Kennett Square, PA.19348, U.S.A.

BOOKS RECEIVED

Harter, W. 1979. *Birds in Fact and Legend.* Pp. 1–128. Black and white drawings. The Oak Tree Press: London. £2.95.

A lighthearted look at tales of birds, true and untrue, popularly written, but with many facts as well as fancies, and illustrated with some pleasing line drawings.

Mackworth-Praed, C. W. & Grant, C. H. B. 1980. *African Handbook of Birds.* Series 1. *Birds of Eastern and North Eastern Africa.* Vols. 1 & 2. Publisher's note and Biographical note. Vol. 1. Pp. xxiv, 1–836. Vol. 2. Pp. xiv, 1–1113 + Index. Longmans: London. Vol. 1. £25. Vol. 2. £30.

A welcome reprint of the 1957 edition of this invaluable handbook, with unaltered text and illustrations and with the addition of 2 maps showing the changes in political boundaries since the book was first published. The publishers regret that the extensive revision needed and the incorporation of notes for future editions left by Col. Mackworth-Praed have not been able to be carried out. It might seem now that they never will be. Mrs. Pat Hall has been responsible for the informative and appreciative biographical note on the two authors, the value of whose work seems likely to endure well into and beyond a fourth decade.

NOTICE TO CONTRIBUTORS

Papers, whether by Club Members or by non-members, should be sent to the Editor, Dr. J. F. Monk, The Glebe Cottage, Goring, Reading RG8 9AP, and are accepted on the understanding that they are offered solely for publication in the *Bulletin*. They should be typed on one side of the paper, with double-spacing and a wide margin, and submitted with *a duplicate copy on airmail paper*.

Scientific nomenclature and the style and lay-out of papers and of References should conform with usage in this or recent issues of the *Bulletin*, unless a departure is explained and justified. Photographic illustrations, although welcome, can only be accepted if the contributor is willing to pay for their reproduction.

An author wishing to introduce a new name or describe a new form should append *nom.*, *gen.*, *sp.* or *subsp. nov.*, as appropriate, and set out the supporting evidence under the headings "Description", "Distribution", "Type", "Measurements of Type" and "Material examined", plus any others needed.

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Only Members of the British Ornithologists' Union are eligible to join the Club: applications should be sent to the Hon. Treasurer, Mrs. D. Bradley, 53 Osterley Road, Isleworth, Middlesex, together with the current year's subscription. The remittance and all other payments to the Club should always be in *sterling* unless an addition of £1.00 is made to cover bank charges for exchange, etc. Payment of subscription entitles a Member to receive all *Bulletins* for the year. Changes of address and revised bankers' orders or covenants (and any other correspondence concerning Membership) should be sent to the Hon. Treasurer as promptly as possible.

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CORRESPONDENCE

Correspondence about Club meetings and other matters not mentioned above should go to the Hon. Secretary, R. E. F. Peal, 2 Chestnut Lane, Sevenoaks, Kent TN13 3AR.

Published by the BRITISH ORNITHOLOGISTS' CLUB and printed by
The Caxton and Holmesdale Press, 104 London Road Sevenoaks Kent.

ISSN 0007 - 1595

Bulletin of the

British Ornithologists' Club

Edited by

Dr. J. F. MONK

Volume 100 No. 4 December 1980

FORTHCOMING MEETINGS

Tuesday, 13 January 1981 at the Senior Common Room, South Side, Imperial College, Princes Gardens, S.W.7 at 6.30 p.m. for 7 p.m. Mr. Stanley Cramp, O.B.E., President of the Union, will speak on *Ornithology and Conservation in Europe*. Those wishing to attend should send their acceptance with a cheque for £4.90 a person to the Hon. Secretary at 2 Chestnut Lane, Sevenoaks, Kent TN13 3AR (telephone Sevenoaks (0732) 50313) to arrive not later than first post on Thursday, 8 January.

Tuesday, 3 March 1981 at the same venue at 6.30 p.m. for 7 p.m. Professor G. M. Dunnet, Ph.D., Regius Professor of Natural History at Aberdeen University, will speak on *Thirty years of Fulmars*. Those wishing to attend should send their acceptance with a cheque for £4.90 a person to the Hon. Secretary (address above) to arrive not later than first post on Thursday, 26 February.

Tuesday, 19 May 1981 at the same venue and time it is expected that Mr. John G. Williams will speak on *The Birds of East Africa*.

Tuesday, 7 July 1981 at the same venue and time Mr. J. H. Elgood will speak on *Birds of Nigeria*.

Subsequent Meetings will be on **Tuesday, 15 September 1981** and **Tuesday, 17 November 1981,** when it is hoped that Mr. David Hosking and Mr. Peter Hayman will speak.

Gifts or offers for sale of unwanted back numbers of the *Bulletin* are very welcome

The Club has no reference copies of Vol. 48 and many earlier issues and these would be very specially appreciated

COMMITTEE

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Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 100 No. 4 Published: 20 December 1980

MEETINGS

The seven hundred and thirtieth Meeting of the Club was held in the Senior Common Room, South Side, Imperial College, London, S.W.7 on Tuesday 16 September 1980 at 7 p.m. The attendance was 22 Members and 13 guests.

Members present were: D. R. CALDER (*Chairman*), F. B. S. ANTRAM, Major N. A. G. H. BEAL, K. F. BETTON, Mrs DIANA BRADLEY, R. D. CHANCELLOR, S. CRAMP, R. A. N. CROUCHER, J. H. ELGOOD, Sir HUGH ELLIOTT, D. J. FISHER, R. S. R. FITTER, A. GIBBS, Miss C. E. GODMAN, B. GRAY, J. A. HANCOCK, Revd. G. K. McCULLOCH, C. F. MANN, Dr. J. F. MONK, R. E. F. PEAL, S. A. H. STATHAM and Mrs. S. VERE TAYLOR (BENSON).

Guests present were: G. ARCHIBALD, Miss M. BARRY, Major B. BOOTH, D. BRADLEY, Miss S. P. L. DIXON, Mrs. R. S. R. FITTER, Mrs. B. M. GIBBS, Mrs. A. HARREL (BOOTH), A. M. HUTSON, Mrs. I. McCULLOCH, Dr. AMICIA MELLAND, Dr. C. M. PERRINS and K. SHAW.

Mr. James Hancock and Dr. Christopher Perrins spoke on their expedition to the Chaco and Corrientes provinces of northern Argentina.

They discussed the discovery of the nests of the nominate races of the Rufescent Tiger Heron *Tigrisoma lineatum* and the Whistling Heron *Syrigma sibilatrix* and showed slides of these little-known species. Dr. Perrins gave details of the rich and varied bird life of the two provinces with illustrations of a number of the unique species of this seldom-visited area. He also described his short visit to the Patagonian region.

The seven hundred and thirty-first Meeting of the Club was held in the Senior Common Room, South Side, Imperial College, London, S.W.7 on Tuesday 18 November 1980 at 7 p.m. The attendance was 26 Members and 14 guests.

Members present were: D. R. CALDER (*Chairman*), F. B. S. ANTRAM, Major N. A. G. H. BEAL, K. F. BETTON, Mrs. DIANA BRADLEY, J. A. BURTON, P. J. CONDER, R. A. N. CROUCHER, J. H. ELGOOD, D. J. FISHER, M. E. K. GORE, B. GRAY, D. GRIFFIN, A. M. HUTSON, Rev. G. K. McCULLOCH, I. G. MANKLOW Dr. J. F. MONK, E. M. NICHOLSON, J. G. PARKER, R. E. F. PEAL, R. C. PRICE, S. A. H. STATHAM, Mrs. S. VERE TAYLOR (BENSON), K. V. THOMPSON, J. F. WALSH and C. E. WHEELER.

Guests present were: Miss M. BARRY, Mrs. V. G. BURTON, Miss S. N. CONDER, Miss S. P. F. DIXON, D. E. FAIR, Dr. CHRISTOPH IMBODEN, Mr. and Mrs. T. R. INSKIPP, Mrs. I. McCULLOCH, P. NEWBERY, T. W. PARMENTER, Miss E. V. PILCHER and Mr. and Mrs. G. H. SEARLE.

Dr. Christoph Imboden spoke on "Some endangered bird species in New Zealand and work by the New Zealand Wildlife Service to save them from extinction" and illustrated his address with colour transparancies. He explained the origins of the N.Z. fauna and the effects of colonization by man in the last 1000 years, including forest clearance and introduction of vertebrates such as ground mammals and 122 bird species (of which 36 are now established), against 116 endemic bird species. On some of the 600 small islands near the main islands it has been possible by intensive work to eliminate rats, cats and goats and, with a ban on boats landing, to prevent re-infestation.

He spoke of the Stitchbird *Notiomystis Cinta,* Chathan Island Robin *Petroica traversi* (now down to seven birds). Kakapo *Strigops habroptilus,* Takahe *Notornis mantelli* and Kokako *Callaeas cinerea,* describing long field work to discover the causes of decline and to evolve remedial measures, such as habitat re-creation and preservation, increase of breeding success, elimination of introduced predators, establishment of new populations and captive breeding.

Rockhopper Penguins *Eudyptes chrysocome* at Gough Island

by A. J. Williams

Received 5 February 1980

The Rockhopper Penquin *Eudyptes chrysocome* is the only penguin which breeds at Gough Island (40°S, 10°W) in the South Atlantic. It is also the only species of penguin which breeds at the Tristan da Cunha Island group (c. 37°S, 12°W, Tristan for convenience), 370 km to the northwest, which is the type locality for the race *E. c. moseleyi.* The nearest breeding localities to the south of Gough Island are the Falkland Islands (51°S, 59°W) and the Prince Edward Islands (46°S, 37°E), where the populations both belong to the nominate race. Accounts of the Rockhopper Penguin at Gough and Tristan are scattered and fragmentary and contain little data. During a visit to Gough Island, from 30 October to 11 November 1979, I collected information on the size and appearance of breeding Rockhopper Penguins, estimated the total population size, and made observations on their breeding biology.

THE SUBSPECIES AT GOUGH ISLAND.

Rockhopper Penguins at Gough and Tristan were considered by early writers, most of whom had experience of several populations of the species, to be larger with longer head plumes than more southerly populations (see review in Murphy 1936). Mathews & Iredale (1921) classified birds at Tristan as a subspecies *E. c. moseleyi,* whereas Hagen (1952) concluded that they were not distinct in size or in the length of their head plumes from other populations. However, it should be noted that Hagen's own data were from birds which were at the islands for their annual moult and were not necessarily mature, breeding individuals. Elliott (1957) considered that the Rockhopper Penguins at Tristan were definitely subspecies on the basis of measurements of the birds' head plumes and of their underwing pattern. Carins (1974), on the basis of photographs, considered that Rockhopper Penguins at Gough Island belonged to the nominate race because they were "dark-faced", with the skin of the face "dark to the edge of the bill", whereas those at Tristan he considered to belong to the race *moseleyi* on the basis of "visually distinct . . . characteristics of the crest", though these surprisingly were not described.

I examined and photographed breeding adult penguins at Gough Island and took measurements of 10 pairs of breeding birds. Their head plumes, underwing pattern and facial colouration were compared with photographs of Rockhopper Penguins at Tristan. They were similar in all respects. Culmen and flipper lengths of breeding adults from Gough Island and elsewhere are compared in Table I. Unfortunately there are no comparable data from Tristan. It is apparent from Table I that Rockhopper Penguins at Gough Island are similar in size to those at Amsterdam Island where the race concerned is *E. c. moseleyi* and that both these populations consist of individuals whose appendages are longer than those of nominate *chrysocome.* I infer from these comparisons that the Gough Island population of Rockhopper Penguins belongs to the race *moseleyi* and that they are not separable from the penguins at Tristan.

TABLE 1
Length (mm) of the culmen and flipper of adult Rockhopper Penguins
Eudyptes chrysocome.[1]

Locality and reference	CULMEN LENGTH N	 ♂♂ Mean ± SD	 N	 ♀♀ Mean ± SD	FLIPPER LENGTH[2] ♂♂ Mean ± SD	 ♀♀ Mean ± SD
Gough I.[3]. (Author)	10	49.1 ± 3.8 (42.7 — 53.8)	10	43.6 ± 1.6 (41.2 — 46.5)	185.0 ± 4.7 (176 — 190)	179.4 ± 4.3 (174 — 186)
Amsterdam I. (Duroselle & Tollu 1977)	75	49.1	73	43.8	189.2	183.3
Marion I. (Author)	5	45.7 ± 1.5	6	40.6 ± 1.7	165.3 ± 7.5	161.5 ± 5.6
Campbell I. (Warham 1972)	10	46.4 ± 1.4	10	41.1 ± 2.1	167. ± 4.4	167. ± 3.4

[1] Other parameters measured at Gough Island but for which insufficient comparable data are available are:
Culmen depth (mm), measured at point where the mandibular rami meet (Warham 1972), 10 ♂♂ 20.2 ± 0.9 (18.7 — 21.4) 10 ♀♀ 17.6 ± 0.8 (16.1 — 18.7); Foot length (mm) 10 ♂♂ 115.9 ± 3.2 (112 — 122) 10 ♀♀ 110.1 ± 4.3 (101 — 116).

[2] Sample size as for culmen length.

[3] Range in parentheses.

POPULATION SIZE

Comer (Verrill 1895) remarked that the penguins at Gough Island numbered "millions" and Swales (1965) considered that "probably two million breed". I sailed around Gough Island in the crayfishing vessel *Hilary* on 31 October 1979. During the 7-hour voyage I scanned the coastline with binoculars and estimated the populations of penguins in units of 100, recording the number of units by mechanical tally counter. The coastline of Gough Island, approximately 40 km long, consists primarily of very steep, vegetated slopes which limit the penguins to a narrow coastal fringe except at two localities on the east coast, The Glen and Sophora Glen, where penguins breed inland and could not be counted from the sea. Swales (1965) estimated the breeding populations at these two glens to be 1000 and 10,000 *pairs* respectively. My own estimate for the remainder of the island totalled 78,300 *birds* (Table 2). At the time of my estimate almost all the birds ashore were males undertaking the last incubation shift and the estimate therefore gives a good indication of the number of breeding *pairs* at the island. Ground-truthing was not possible because the number of readily accessible areas adjacent to the weather station, where I was based on the island, contained few penguins and these were counted when the boat was closer inshore than at other sectors of the coast. Nevertheless, I consider that my

TABLE 2
Population size of Rockhopper *Eudyptes chrysocome* at Gough Island by coastal sector

Coastline sector	Estimated numbers of pairs
Transvaal Cove to South West Point	8,400
South West Point to Gaggins Point	4,900
Gaggins Point to North Point	15,700
North Point to North East Point	32,700
North East Point to The Glen	16,600
The Glen & Sophora Glen	(11,000)[1]
The Glen to Transvaal Cove	none visible from sea 89,300

[1] data from Swales (1965)

estimate had an error of no more than ±33%, or for convenience, a total of 25,000 birds. On this basis, and using Swales' (1965) data for inland populations, I estimated the current breeding population of Rockhopper Penguins at Gough Island to be 90,000±25,000 pairs.

This estimate, though vastly lower than the previous claims of millions, does not necessarily indicate a drastic reduction in the numbers of penguins at Gough Island. The steep slopes which confine the penguins to the coastal fringe also make it impossible to approach and census all the penguin colonies from the landward side. There is no evidence that Comer (Verrill 1895) or Swales (1965) made any concerted attempt to count penguins or indeed that they circumnavigated the island and their claims must be regarded as educated guesses. Swales (1965), also it should be noted, claimed that there were 200,000 pairs of Rockhopper Penguins at "Rookery Point", a locality which does not appear on his accompanying map. I have had extensive experience of counting penguins at other localities (Williams *et al.* 1979), and saw neither evidence for such a large colony nor an area which could accommodate a colony of this size. I think the previous estimates must have been such gross overestimates as a result of misjudging the size of suitable breeding habitat.

Warham (1975) considered that the race *moseleyi* was confined to four localities: the Tristan da Cunha islands, and St. Paul, Amsterdam and Gough Islands. The Rockhopper Penguin populations at each of these localities have now been estimated – Tristan 280,000 pairs (Elliott 1957); Amsterdam Island 100,000 pairs (Segonzac 1972); St. Paul Island 10,000 pairs (Segonzac 1972) – so that with Gough Island's 90,000 pairs, the world population for this subspecies is about 480,000 pairs, of which some 20% breed at Gough Island.

CLUTCH SIZE AND DIMENSIONS

Rockhopper Penguins, like all *Eudyptes* penguins, lay a clutch of 2 eggs which are dimorphic, the first laid or A-egg being markedly smaller and lighter than the second laid or B-egg (Warham 1975). There have been several reports that 3-egg clutches are laid at Tristan (e.g. Murphy 1936, Elliott 1957) and Watson (1975) has, apparently by extrapolation, stated that this is also the case at Gough Island. The reports of 3-egg clutches are not fully authenticated and are probably erroneous (Williams in press, a). Investigation of Rockhopper Penguin clutches at Gough Island by Shaughnessy (Shaughnessy & Fairall 1976), Voisin (1979) and myself have all failed to find any 3-egg clutches.

TABLE 3

Dimensions (mm) of Rockhopper Penguin *Eudyptes chrysocome* eggs

	LENGTH				BREADTH			
		A–egg		B–egg		A–egg		B–egg
Locality and reference	N	Mean ± SD	N	Mean ± SD	N	Mean ± SD	N	Mean ± SD
Gough I.[1] (Author)	30	65.2 ± 4.0 (51.4 — 70.8)	30	73.0 ± 2.6 (67.3 — 76.8)	30	49.2 ± 1.8 (45.5 — 52.8)	30	55.2 ± 1.7 (52.6 — 58.5)
Amsterdam I. (Duroselle & Tollu 1977)	44	63.2	44	70.1	44	49.7	44	54.7
Marion I. (Author)	122	62.3 ± 2.6	119	70.2 ± 2.6	122	46.8 ± 1.7	119	52.9 ± 1.7
Heard I. (Gwynn 1953)	11	63.9 ± 2.7	11	71.9 ± 2.0	11	46.4 ± 2.9	11	52.9 ± 2.5

[1] Gough Island range in parentheses.

I measured the eggs in 30 2-egg clutches at Gough Island and these data are compared with data from other localities in Table 3. Both A- and B-eggs at Gough Island are on average longer and broader than eggs elsewhere (excepting the breadth of A-eggs at Amsterdam Island); but the degree of dimorphism between A- and B-eggs at Gough Island, calculated by Warham's (1975) method, is similar to that at other localities.

BREEDING SEASON

Comer (Verrill 1895) reported finding the first Rockhopper Penguin eggs at Gough Island on 14 September and that egg-laying was completed by 29 September. Swales (1965) reported that in 2 seasons the first eggs were found on 1 and 4 October. Newly hatched chicks have been recorded on 5 November (Shaughnessy & Fairall 1976) and 11 November (Swales 1965). During my visit, newly hatched chicks were found on 31 October, but most eggs did not hatch until 7–9 November. As the incubation period of the B-eggs of *Eudyptes* penguins (which produce most of the hatchlings) averages 35–57 days, the eggs at Gough Island during the last 20 years must have been laid in late September or early October, which is 2 weeks later than recorded by Comer in 1889. Since the time at which Rockhopper Penguins lay their eggs is related to sea temperature (Warham 1972), this suggests that there may have been some change in mean monthly sea temperatures between Comer's 1889 and Swales' 1955 visits. A similar delay in the breeding of Rockhopper Penguins has been recorded at Tristan (Elliott 1957).

MISCELLANEOUS OBSERVATIONS

At Marion Island (46°S, 37°E) only 41% of the Rockhopper Penguin nests which retain eggs until the end of the incubation period contain 2 eggs, and once the larger B-egg has hatched the remaining A-egg at these nests is ignored and fails to hatch (Williams in press, b). At Gough Island both eggs were retained until the end of incubation (65%) at significantly more nests than at Marion Island (Table 4) and there seemed to be a higher proportion of nests at which 2 chicks hatched. Two factors are probably responsible for this situation: differences in the degree of predation and in nest-site ecology. The loss of eggs to predators is apparently more common at Marion than at Gough Island, because the penguin nest-sites at Marion Island tend to be less sheltered by rocks and vegetation than at Gough Island and also because the intensity of predation is probably greater at Marion Island than at Gough Island. Two predators, the Lesser Sheathbill *Chionis minor* and Subantarctic Skua *Catharacta antarctica lonnbergi*, prey upon Rockhopper Penguin eggs at Marion Island, whereas at Gough Island there is no predator of similar size to the Sheathbill, and the Subantarctic Skuas *C. a. hamiltoni* appear to prefer small petrels (Procellariidae, Hydrobatidae and

TABLE 4

Contents of Rockhopper Penguin *Eudyptes chrysocome* nests at the end of the incubation period

	Marion Island		Gough Island	
Contents	%	(N)	%	(N)
A–egg only	6.3	(12)	10.4	(17)
B–egg only	52.9	(101)	23.9	(39)
A and B eggs[1]	40.8	(78)	65.7	(107)

[1] Comparison of data in this line by **X**² homogeneity (or contingency test gave a **X**² value of 21.7.

Pelecanoididae), which are more numerous there than at Marion Island, to penguin eggs.

Rockhopper Penguins incubate with their eggs placed one in front of the other, with the posterior egg situated between the parent's feet and thus less accessible to predators than the anterior egg (Burger & Williams 1979). The position of the eggs was recorded in 46 2-egg clutches at Gough Island. At two-thirds (31) the A-egg was in the anterior position. Some individual Subantarctic Skuas may specialise in preying upon penguin eggs and at one skua midden at Gough Island there were 30 eggs. Of 19 measurable eggs from this midden, 13 – approximately two-thirds – were A-eggs, a direct reflection of the normal placing of A-eggs in the anterior, more vulnerable incubation position.

Acknowledgements: I am grateful to the South African Department of Transport for permission to travel to Gough Island, for transport to the island and for accommodation and facilities at their weather station at Gough Island. This research has been sponsored and supported by the South African Scientific Committee for Antarctic Research and the University of Cape Town. It is a particular pleasure to acknowledge the help of Captain Stoffberg and his crew in the *M.V. Hilary*. I am indebted to Mrs. M. K. Rowan for the loan of photographs of Rockhopper Penguins taken at the Tristan da Cunha group and for discussion of the text. I also thank P. D. Shaughnessy for comments on the text.

References:

Burger, A. E. & Williams, A. J. 1979. Egg temperatures of the Rockhopper Penguin and some other penguins. *Auk* 96: 100–105.

Carins, M. 1974. Facial characteristics of Rockhopper Penguins. *Emu* 74: 55–57.

Duroselle, T. & Tollu, B. 1977. The Rockhopper Penguin (*Eudyptes chrysocome moseleyi*) of Saint Paul and Amsterdam Islands. *In* Llano, G. (ed.), *Adaptations within Antarctic Ecosystems*. Smithsonian Inst: Washington.

Elliott, H. F. I. 1957. A contribution to the ornithology of the Tristan da Cunha group. *Ibis* 99: 545–586.

Gwynn, A. M. 1953. The egg-laying and incubation periods of Rockhopper, Macaroni and Gentoo Penguins. *A.N.A.R.E. Reports, Series B,* 1: 1–29.

Hagen, Y. 1952. Birds of Tristan da Cunha. *Res. Norwegian Sci. Exped. Tristan da Cunha* 20: 1–248.

Mathews, G. M. & Iredale, T. 1921. *Manual of the Birds of Australia,* Vol. 1. London: Witherby.

Murphy, R. C. 1936. *Oceanic Birds of South America,* Vol. 1. New York: American Museum of Natural History.

Segonzac, M. 1972. Données récentes sur la faune des îles Saint-Paul et Nouvelle Amsterdam. *Oiseau* 42: 3–68.

Shaughnessy, P. D. & Fairall, N. 1976. Notes on seabirds at Gough Island. *S. Afr. J. Antarct. Res.* 6: 23–25.

Swales, M. K. 1965. The sea-birds of Gough Island. *Ibis* 107: 17–42.

Verrill, G. E. 1895. On some birds and eggs collected by Mr. Geo. Comer at Gough Island, Kerguelen Island and the island of South Georgia. *Trans. Connect. Acad.* 9: 430–478.

Voisin, J-F. 1979. Observations ornithologiques des îles Tristan da Cunha et Gough. *Alauda* 47: 73–82.

Warham, J. 1972. Breeding seasons and sexual dimorphism in Rockhopper Penguins. *Auk* 89: 86–105.

Warham, J. 1975. The crested penguins. In *The Biology of Penguins:* 189–269. Stonehouse, B. (ed.). London: Macmillan.

Watson, G. E. 1975. *Birds of the Antarctic and Sub-Antarctic*. Washington D.C. American Geophysical Union.

Williams, A J. In press, a. The clutch size of Macaroni and Rockhopper Penguins.

Williams, A. J. In press, b. Offspring reduction in Macaroni and Rockhopper Penguins. *Auk*.

Williams, A.J., Siegfried, W. R., Burger, A. E. & Berruti, A. 1979. The Prince Edward, Islands:. sanctuary for seabirds in the Southern Ocean. *Biol. Consery.* 15: 59–71.

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A new species of cotinga from southeastern Brazil

by D. W. Snow

Received 14 February 1980

On 24 October 1942 Pedro de M. Britto, working for the Brazilian Serviço de Estudos e Pesquisas Sobre a Febre Amarela, collected a cotinga near Teresópolis in the Serra dos Orgãos, in the State of Rio de Janeiro. The specimen, now in the collection of the Zoological Museum of the University of São Paulo, was identified as a Black-and-gold Cotinga *Tijuca atra* and placed with that species. It is a female and is quite similar to the female of *Tijuca atra,* though considerably smaller. In November 1972 Derek Goodwin and I noticed the specimen in the São Paulo collection, and later drew attention to its main peculiarities in our account of a field study of the Black-and-gold Cotinga (Snow & Goodwin 1974). Since then I have been able to re-examine the specimen, and through the kindness of Dr. H. F. de A. Camargo I was allowed to cut the end off one of its secondary feathers for analysis of its feather proteins and comparison with *Tijuca atra* and other cotingas. Since the result of this analysis, which has been carried out by Dr Alan Knox of Aberdeen University, shows that the bird is highly unlikely to be conspecific with *Tijuca atra,* it is appropriate that it should be named as a new species, as follows:

Tijuca condita sp. nov.

HOLOTYPE: Museu de Zoologia, Universidade de São Paulo, no. 33432, female, apparently adult, from Fazenda Guinle, Teresópolis, Rio de Janeiro, Brazil, approx. 22°27′S, 43°00′W; collected by Pedro de M. Britto, 24 October 1942.

DISTRIBUTION: Known only from the type locality.

DESCRIPTION OF HOLOTYPE: Upper parts including upper wing-coverts olive-green, suffused with yellow on the rump, crown duller than rest of upper parts (cf. *T. atra* female, in which upper parts are uniform, less bright olive-green with no yellow wash on rump). Underparts mainly olive-yellow, greyer on throat and brighter yellow on belly and under tail-coverts; under wing-coverts yellow (cf. *T. atra* female, in which underparts are less yellow throughout). Flight-feathers grey above, inner secondaries washed with olive-green, especially on outer edges; outer edges of all flight-feathers except inner secondaries pale blue-grey (cf. *T. atra* female, in which flight-feathers are all olive-green); primaries uniform grey below (not yellow-green at base of inner webs, as in *T. atra*). Tail grey, outer edges of feathers paler, some faintly washed with greenish (cf. *T. atra* female, in which the tail-feathers are all olive-green). Soft part colours: iris grey; bill and feet plumbeous ("olhos pardos; bico e pés plumbeos").

MEASUREMENTS OF HOLOTYPE: Wing chord 122 mm; tail 106 mm (all feathers of nearly equal length, outermost pair a little shorter than the others); tarsus 26.5 mm; culmen from posterior margin of nostril 14.5 mm; bill depth at level of anterior margin of nostril 7 mm. Wing formula (as apparent in folded wing): p 7 is longest primary, p 8 very slightly shorter, p 6 1 mm shorter; p 6–8 form the wing-tip; p 5 and p 9 equal in length; p 10 falls a little short of p 1.

DERIVATION OF NAME: from Latin *conditus,* stored away, hidden; referring to the fact that the type specimen remained stored away and unrecognised for 30 years after being collected.

TABLE 1

Measurements of *Tijuca condita* and *T. atra* compared

	Tijuca condita ♀ (type)	*Tijuca atra* ♀♀ (sample number in parentheses)
Wing	122	140–146 (10)
Tail	106	114–119 (7)
Tarsus	26.5	29–30 (6)
Culmen	14.5	15.5–18 (7)
Bill-depth	7	9, 9.5 (2)

Notes: Tarsus-length from intertarsal joint to last individed scute before toes. Culmen from posterior margin of nostril to tip. Bill-depth at level of anterior margin of nostrils.

ADDITIONAL REMARKS

In external characters this new bird is close to *Tijuca atra*, but smaller in all measurements (Table 1). The wing-shape is very similar; the bill shape is similar except that the culmen is less arched; and the tarsal scutellation is similar. The plumage colours are sufficiently like those of the female of *T. atra* to have led to its original misidentification, although the grey wings and tail are perfectly distinctive. The broad, somewhat angular shapes of the tips of the secondaries and tail-feathers strongly suggest that the bird is in adult plumage. Its sex is confirmed by the collector's drawing of the ovary (measuring c.10 x 7 mm) on the label. The provisional allocation of the species to *Tijuca* thus seems reasonable on the basis of its external morphology. On zoogeographical grounds it is also reasonable, as *T. atra*, the only other member of the genus, is also a southeastern Brazilian montane endemic.

Electrophoresis of reduced and carboxymethylated feather-proteins (*S*CMK) from a wide variety of species has revealed species-specific patterns in all the cases examined (Knox 1980). Subspecies are only very rarely distinguishable and even then the differences are slight (Knox, pers. comm.). There is apparently no polymorphism in *S*CMK. Results from the analysis of cotinga feathers (Table 2) show that the *S*CMK pattern from the new bird is quite different from that of *Tijuca atra,* the magnitude of the difference being consistent with what would be expected from two quite distinct species. The similarity value obtained (0.76) suggests that it is justifiable to treat the new bird and *T. atra* as congeneric provisionally, but that they are not very closely related.

TABLE 2

Electrophoretic similarity values (*I*) for *S*CMK from *Tijuca condita* and 3 other cotinga species (see Knox (1980) for experimental details). Values of *I* vary 1 to 0; where *I* = 1, the electrophoretic patterns are identical, where *I* = 0, they are totally different

	Carpornis cucullatus	*Lipaugus vociferans*	*Tijuca atra*
Lipaugus vociferans	0.52		
Tijuca atra	0.55	0.77	
Tijuca condita	0.50	0.65	0.76

It is interesting that, whereas *Carpornis cucullatus* shows relatively low similarity values with the two *Tijuca* species and with *Lipaugus vociferans* (0.50–0.55), *L. vociferans* and *Tijuca atra* have a similarity value of 0.77, and *L. vociferans* and *T. condita* a value of 0.65. This suggests the possibility that *Tijuca* and *Lipaugus* may not be very distantly related. In this connection it may be significant that two montane *Lipaugus* species in the Andes (*cryptolophus* and *subalaris*) are similar in general colouration to females of *Tijuca*, that one of them (*subalaris*) has a grey tail like *T. condita*, and that both *Lipaugus vociferans* and *Tijuca atra* have lek displays in which the males advertise themselves primarily by far-carrying calls.

In October 1972, and again in November 1979, I spent several days studying cotingas and other forest birds in the Serra dos Órgãos, and a number of other ornithologists have watched birds in the same area in recent years. Nobody has reported any *Tijuca*-like bird apart from *T. atra*. The Fazenda Guinle, where *Tijuca condita* was collected, was a large property, now broken up, which included part of what is now the town of Teresópolis, at an altitude of about 800 m, and parts of what is now the Serra dos Orgãos National Park, at altitudes of 900 m and upwards. The upper limit of forest is at about 2000 m and the highest peak is about 2260 m. There is no record of the altitude at which the specimen was collected, but two considerations suggest that *Tijuca condita* may be a bird of high-altitude forest and that the unique specimen may either have been collected high up or, if not, may have been a straggler from a higher altitude. First, the upper parts of the forest of the Serra dos Orgãos are comparatively difficult of access and much less time must have been spent there than in the lower parts by observers competent to detect a new species; and secondly, bird species occurring at lower altitudes in the southeastern Brazilian mountains generally have wider geographical ranges than those confined to high altitudes. *Tijuca atra,* for example, is one of the species that is confined to high altitudes and it has one of the most limited ranges of all southeastern Brazilian endemics.

The rediscovery of the new *Tijuca*, and especially of the unknown male, should be a challenge to anyone who has the opportunity to do field work in the Serra dos Orgãos. If it is a high-altitude species it is unlikely to be extinct, since much undisturbed forest remains in the higher parts of the Serra; but on the less likely assumption that it is, or was, a bird of the lower-level forests of which only remnants now exist, its survival must be more doubtful.

Acknowledgements: I am most grateful to Dr. H. F. de A. Camargo for giving me all facilities in examining the type specimen of *Tijuca condita* in Sao Paulo and especially for allowing me to remove part of a feather; and to Dr. Alan Knox of Aberdeen University for carrying out the electrophoretic analysis and for help in preparing this account. Sr. Dante L. Martins Teixeira kindly provided much practical help in the field during my 1979 visit to Brazil.

References:

Knox, A. G. 1980. Feather protein as a source of avian taxonomic information. *Comp. Biochem. Physiol.* 65B: 45–54.
Snow, D. W. & Goodwin, D. 1974. The Black-and-gold Cotinga. *Auk* 91: 360–369.

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A mass-migration of Rollers *Coracias garrulus* in Somalia

by J. S. Ash and J. E. Miskell

Received 23 February 1980

Observations on large assemblages of Rollers *Coracias garrulus* in Africa have been summarised by Moreau (1972), including accounts of large feeding concentrations and of high densities of wintering birds, but with no indication that the species may migrate *en masse*. The following account of a migration of large numbers of Rollers seen by us in spring in southern Somalia is therefore of interest, and would seem to be the first published account of such a phenomenon.

On 13 April 1979 we travelled slowly by road from Mogadishu (2°03'N, 45°22'E) through Balad (2°22'N, 45°25'E) on the Webi Shebelli to Jiohar (2°46'N, 45°31'E). The first indication of Roller activity was of 4 birds crossing the road in an easterly direction at Balad at 0900, followed shortly afterwards by 2 more. At 13 km north of Balad there were *c.* 100 Rollers, together with *c.* 100 migrant falcons of 4 species (*tinnunculus, naumanni, amurensis* and *subbuteo*), hawking for late termites over thick bush.

A few kilometres further north there were more Rollers, and then at 25 km north of Balad the sky was "full" of them at midday. It was hot and sunny with about half the sky covered with broken cloud, but at a distance in the east there was a heavy rainstorm with lightning from a mass of black cloud. The wind was easterly and light. From where we stood, apparently on the northern edge of the flight, we saw immense numbers of Rollers, all flying steadily E.N.E. at all altitudes from *c.* 100 m up to the limit of visibility with the naked eye. Through binoculars birds were in undiminished numbers to the W.S.W. for an estimated 5 km, although it later became obvious that they extended further.

We gained the distinct impression of a column of birds 5000 m or more in width and some 500 m in depth. Estimating their numbers was difficult, for the birds were not in flocks, but spread out almost uniformly and more or less equidistant from each other within the column. We had no time to make long series of accurate counts for we were anxious to establish the extent of the Roller passage, as well as to check on an unprecedented movement, for Somalia, of falcons and grounded night-migrants (notably Lesser Grey Shrikes *Lanius minor*). We estimated the numbers of birds in an "arc of visibility" (between the northern edge of the column and a line at right angles across the column) from a point along its northern edge. We judged we could see birds for 5000 m, and that their ground speed was 48 km/hour. Our 4 counts provided totals ranging from 2000 to 15,000 birds. We were aware that much of our calculation was based inevitably on supposition, but concluded that a minimum of 10,000 birds passed in this half hour.

Mixed with the Rollers were several loose parties of small falcons, a few unidentified swifts, and many Swallows *Hirundo rustica,* some of which flew in compact groups at altitudes of over 100 m, though others were skimming along at near ground level.

We proceeded further north towards Jiohar, and during the next 2–3 hours the wind increased from the east, which may have drifted the Roller passage westwards. During this period passage continued apparently unabated, but possibly at reduced strength. Gradually we moved away from the birds and on our return through the area in the late afternoon none was seen.

Unfortunately we do not know when the movement started but the first birds we saw were at 0900. During the period when we were actually observing them on migration, we judged that 40–50,000 Rollers flew over. If the passage was equally intense earlier in the morning then double these numbers may have been involved.

The existing knowledge concerning the status of the Roller in Africa is discussed in detail by Moreau (1972). Practically the entire Palaearctic population overwinters in Africa, confined largely to the east and south below the equator. Even though he says that Rollers are numerous in Somalia, where more were seen in autumn than spring, there are still rather few records (Archer & Godman 1961, Bannerman 1910, Heuglin 1869–1874, Phillips 1896, Moltoni 1936, Salvadori 1894). Only Heuglin mentions large numbers (hundreds at Zeila (11°21′N, 43°28′E) in October), and there seem to be only 2 previous spring occurrences, in early April and on 11 May, and both in the north. During 2 springs and 2 autumns in 1978–1980, we ourselves saw 13 Rollers in the southern part of the country in autumn (8 October–24 December), and in spring besides the large movement on 13 April, we saw 25 flying E.N.E. the next day south of Balad, and three single birds in Central Somalia, 28 April–1 May 1979. We did not see any in the western half of northern Somalia in May 1979, but in 1980 we counted 12 birds, all singly except 2 once, during 22 April–14 May, in central Somalia and the eastern half of the north. We particularly looked out for any sign of a large scale diurnal passage in the northeast, but failed to detect any. The wide scattering of single birds suggested a broad-front migration over this area, but the extreme aridity of the land after a long period without rain resulted in a largely inhospitable environment for Rollers, and would be unlikely to attract large numbers.

Some birds overwinter in the more southerly part of the country. On 3 days, 9–11 January 1980, 29 were scattered in the lower Juba and lower Shebelli River valleys, and a little later a further 4 during 21–24 February, the most northerly being at Far Sarey (1°01′N, 43°22′E) on the Shebelli.

Moreau mentions 2 other points relevant to the present discussion. First that it can be inferred that "birds accumulate fat for the spring migration at very low latitudes and make a continuous flight from the neighbourhood of the equator"; and secondly that Rollers collect into loose flocks, each bird in sight of another when on migration. Whether or not birds accumulate fat at low latitudes remains to be demonstrated, but would seem to be highly likely. Diurnal migration in a loose flock, such as that described above would enable a great many birds to exploit any available food sources, such as swarming termites, found along the migratory route, since not only is an area searched that is very much greater than would be the case if the birds were in dense flocks, but also a quest for airborne insects is more likely to be successful for individuals if they are well spaced out at all altitudes. Any one bird finding food would be visible to its neighbours, each of which would attract the attention of more distant birds, producing an effect similar to that when vultures are attracted to a corpse. We consider that this type of migratory flocking may be a special adaptation in the case of Rollers to enable them to find food whilst on passage.

It is not so surprising that a mass-migration of Rollers could have passed unnoticed previously in Somalia. The country is poorly known ornithologically, and even if it were not so, the chances are slim of someone being present somewhere along what may be a narrow zone of concentration for the main movement of birds. Passage may be completed in only a few days, so that the period of time in which the birds could be seen would be very limited.

Brown & Brown (1973) have estimated that the overwintering population of Rollers in eastern Kenya may be in the region of 2–3 million birds, but that their numbers fluctuate greatly from year to year. However, this area is at the northern edge of their winter range, so that the main bulk of the Palaearctic population must be further south. In all, there must be many millions of birds whose breeding range extends across Europe and Asia as far as 75°E. Most of them, therefore, have to head for breeding quarters lying between north and northeast of where they overwinter. The flight direction of birds passing over Somalia is thus somewhat puzzling. If on a constant heading they must previously have been over the arid country of northern Kenya, and shortly afterwards would have crossed the Somalia coast to face an immense great circle course journey over the northern Indian ocean towards southern India. This seems highly improbable (in April) during the North East Monsoon. Alternatively, on reaching the coast they may turn northeastwards, and by doing so could reach Cape Guardafui and a much shorter, though still long ocean crossing towards the Bay of Bengal and the more easterly, and by far the largest, sector of their breeding range. However, this is merely speculation, and it is perhaps more probable that the birds we saw were either merely diverted towards the large rainstorms to seek airborne insects in the upwelling of air ahead of the rain, or were compensating for some earlier disorientation caused by adverse weather further south.

Whichever route they follow in spring, and Moreau suggests there may be a passage both ways across the northern Indian ocean, it is possible that it may be used by large concentrations of birds on a narrow front, and for this reason it should be easier to detect if its path is ever crossed.

Acknowledgement: To Dr. J. F. Monk, for his valuable comments and editorial help, our best thanks.

References:
Archer, G. & Godman, E. M. 1961. *The Birds of British Somaliland and the Gulf of Aden.* Vol. 3. Edinburgh & London: Oliver & Boyd.
Bannerman, D. S. 1910. On a collection of birds made in northern Somaliland by Mr. G. W. Bury. *Ibis* 1910: 291–327.
Brown, L. H. & Brown, B. E. 1973. The relative numbers of migrants and resident Rollers in eastern Kenya. *Bull. Brit. Orn. Cl.* 93: 126–130.
Heuglin, M. TH. 1869–1874. *Ornithologie Nordost-Afrikas, der Nilquellenund Kusten-Gebiete des Rothen Meeres und des Nordlichen Somal-landes.* Cassel: Fischer.
Moltoni, E. 1936. Gli ucelli fino ad oggi notificati per la Somalia italiana. *Atti della Soc. Ital. di Scienze Naturali* 75: 307–389.
Moreau, R. E. 1972. *The Palaearctic-African Bird Migration Systems.* London: Academic Press.
Phillips, E. L. 1896. On birds observed in the Golis Mountains in Northern Somaliland. *Ibis* 1896: 62–87.
Salvadori, T. 1894. Uccelli del Somali Raccotti da D. Eugenio dei Principi Ruspoli. *Mem. R. Accad. Sci. Torino,* (2), 44: 547–564.

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Growth and plumage changes of the Grey Crowned Crane *Balearica regulorum gibbericeps*

by D. E. Pomeroy

Received 1 March 1980

In his review of the African crowned cranes, *Balearica,* Walkinshaw (1964) recognised 2 species *B. pavonina* and *B. regulorum. B. r. gibbericeps* is the form found in Tanzania and throughout Uganda and Kenya except for the far north and, according to Mackworth-Praed & Grant (1952) also in Zambia, Malawi and Angola. Subsequently Snow (1978) placed all African crowned cranes in *pavonina;* but Brown *et al.* (in press), on the basis of both field observation and skins, retain both species. For simplicity, I have employed the term Crowned Crane, unless otherwise specified, to mean *G. r. gibbericeps.*

Between 1970 and 1973 I obtained 7 Crowned Cranes of various ages in southern Uganda. Three young birds were reared in captivity for periods of

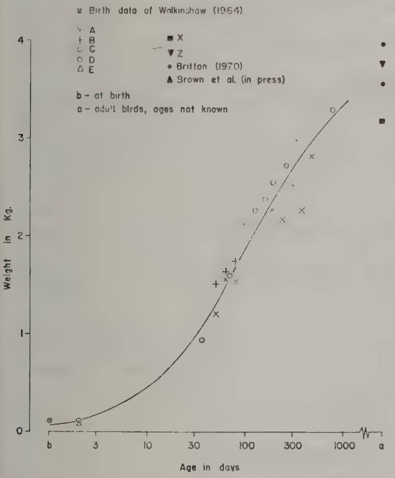

Fig. 1.

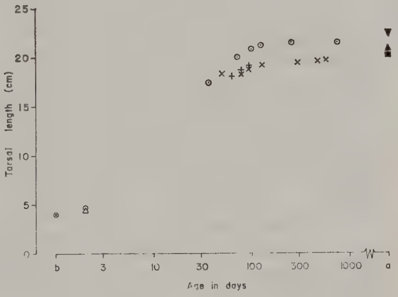

Fig. 2.

Fig. 1. Weights of 5 young and 4 adult Crowned Cranes *Balearica regulorum.* Britton's (1970) 2 birds were from Kenya. The curve was fitted by eye. Note that age is represented on a logarithmic scale.

Notes:

A = young c. 7 weeks old when obtained.
B = same as A.
C = young c. 4 weeks old when obtained.
D, E = young c. 2 days old, both dying 2 days later.
X, Z and Britton's (1970) birds were adults.

(*above, right*)

Fig. 2. Tarsal lengths of 5 young and 2 adult Crowned Cranes *Balearica regulorum,* together with published data. Symbols as for Fig. 1.

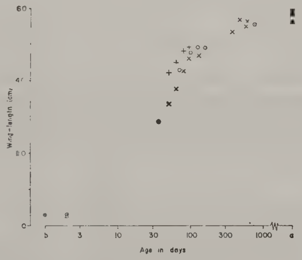

Fig. 3. Wing-lengths of 5 young Crowned Cranes *Balearica regulorum* and a number of adult Crowned Cranes. Symbols as for Fig. 1.

					AGE IN MONTHS						
		Hatchling (note (a))	1	2	3	4	6	8	12	20	Adult
HEAD	CROWN, NAPE			brown	— —	— —	—		black, velvety		
	FACE				feathered, buff		— —	— —	downy white feathers		bare skin (note (b))
	CREST: FEATHERS	—	—	spiky, golden-buff		— —			spiral buff feathers with black tips		
	: LENGTH	0	2	5	6	8	9	10	10	11	12
	BILL : COLOUR				upper black, lower partly horn-coloured			— —	— —	both mandibles black	
	: LENGTH	2·1	3·5	4·8	5·3	5·6	5·7	5·7	5·8	5·9	6·1
	IRIS COLOUR		dark brown		— —	pale brown			— — —		pale blue
NECK	COLOUR		fawn, darker dorsally		— — —		grey replaces buff dorsally, then ventrally from posterior		— — —		grey, with plumes
	WATTLE					—	pink	— —			red
UNDER-PARTS	COLOUR	fawn	— —		grey with buff tips, buff feathers persisting longest posteriorly		— —			grey (note (c))	
UPPER-PARTS	COLOUR	fawn, darker dorsally	— —		dark grey with buff tips	— —				dark grey (note (c))	
WING	SPAN		110	145	170	175	175	180	180	187	192
	PRIMARIES		— —					black, glossed green			
	SECONDARIES		— —			inner black, remainder with chestnut and black, black reducing with age (note (d))					all except inner 3 entirely chestnut
	MAJOR COVERTS		— —		white with buff tips		— —			white (note (e))	
								— —		inner 6-8, golden plumes (note (f))	
	LESSER COVERTS		— —		white, with varying amounts of grey and buff	— —			white		
TAIL	COLOUR		— —					black, glossed green			
	LENGTH		7	14	15	16	17	20	24	26	26
LEGS	COLOUR	pink	— —	horn	— —			black			

TABLE I

Changes with age (in months) in the appearance of young Crowned Cranes *Balearica regulorum* (see Fig. 1). Measurements are in cm. There was some individual variation and the data are only approximate with respect to age. Details of moult were not recorded.

Notes

(a) Walkinshaw (1964) gives a detailed description of the South African Crowned Crane *B. r. regulorum* at hatching.

(b) In the adult, there are bright red patches above and below the white face. Mackworth-Praed & Grant (1952) and Walkinshaw (1964) mention only the upper patch. The red patches are preceeded by pink, noticeably paler in the field at 12 months, and in captives up to 18–20 months.

(c) Mackworth-Praed & Grant (1952) describe the "general colour" as black, but this is not so, although posteriorly the grey is darker.

(d) In the adult, the outermost one or two secondaries resemble primaries in appearance, the next two or three have inner webs black, and the exposed parts of the remainder are all chestnut, but with black bases. The innermost two or three secondaries are plume-like.
(e) In the adult, all under-wing coverts are completely white.
(f) This increases to about 15 in the adult, the proximal parts being white with a normal vane.
(g) Brown *et al.* (in press) give mean tail-lengths of 24 cm and bill-lengths of 6.3 cm for adults of various races.

up to 23 months (Figs. 1–3). Their ages when first obtained were judged from the opinions of several Ugandans who were familiar with young Crowned Cranes in the wild; their independent estimates were averaged, but in any case were in close agreement. The birds were kept in a large aviary and fed mainly on groundnuts, supplemented with a variety of other foods, especially insects, of which they were particularly fond (Clarke & Amedei 1969; Pomeroy 1980). No attempt was made to tame them.

GROWTH OF YOUNG BIRDS

Typically, weight increase follows a sigmoid curve. Ricklefs (1973) gives several methods of determining a growth-constant K_G which relates weight to time, and is a characteristic of the particular species. When a curve was fitted by eye to the data of Fig. 1, and weights at various ages estimated from it, the rate of growth was found to decrease with age, namely at 10–30 days $K_G = 0.0440$, at 30–100 days $K_G = 0.0133$, at 100–300 days $K_G = 0.0047$ and at 300–1000 days $K_G = 0.0014$. Taking values from the curve, the weight of the young at 100 days (Fig. 1) was only half the average weight of the 4 adults; whereas tarsal length (Fig. 2) was about 95% and wing-length (Fig. 3) 85% of the adult values. Relatively faster tarsal growth is to be expected in a nidifugous species living in long grass, and indeed the young are noticeably "long-legged". The wing-length is only slightly higher than would be expected from the weight on a basis of proportionality $0.85^3 = 0.61$). Growth of bill, tail, wing-span and crest were also slow (Table 1), only approaching adult dimensions at an age of 12–20 months.

Judging from their locomotory behaviour, the young captives were probably capable of flight by an age of about 100 days. This agrees with Walkinshaw's (1964) observations on wild *B. r. regulorum*. In Uganda, there were several occasions when I saw flying young that were noticeably smaller than their parents.

The appearance of the young changes progressively with age (Table 1). In the field, they are distinguishable from adults up to 12 months old (Table 2.b), when the adult face patterning is apparent though not fully-developed. The adult eye-colour and the full red of upper and lower face-patches and neck wattle are not attained until 20–24 months, but only exceptional views enable these characters to be distinguished in the field.

Changes in plumage result, of course, from growth, wear and moult of feathers. Moult sequences of young *Balearica* were not reported by Stresemann & Stresemann (1966) and they are apparently unknown. The young bird retains its cryptic appearance until nearly 2 months old, when the white wing coverts first appear, but these are relatively inconspicuous until after the young can fly. The flight feathers of the immature resemble those of the adult by the age of 3 months, but the decorative golden plumes of the inner secondary coverts, and the grey ones of the neck, only begin to appear at around 12 months, whilst even at 20 months the face and iris lack the full colours of the adult.

Discussion

The growth-rate of young *B. r. regulorum* is slow, despite an initial rate comparable to that of other nidifugous birds of similar size (Ricklefs 1973); they take about 2 years to reach full adult size. The Sandhill Crane *Grus canadensis* of North America maintains its initial growth-rate, so that by an age of 4–5 months its weight is 91% that of adults (Miller & Hatfield 1974), whereas Crowned Cranes of that age had attained less than 60% of the adult weight. This difference may be attributed to the greater need of the Sandhill Crane for rapid growth, since unlike the Crowned Crane it is migratory.

The fact that crowned cranes also take about 2 years to achieve adult plumage is not surprising for a large species which is probably at least 3 years old when it first breeds (Sandhill Cranes are thought not to breed before the age of 4—Miller 1973). However, whereas most species have one or more distinctive juvenile plumages, usually separated by moults, the development of the adult plumage in Crowned Cranes is a continuous process, but lacking synchrony between the different parts of the body.

The use of plumage details in distinguishing different races of *B. regulorum* needs further investigation. Walkinshaw (1964: 361) doubted whether *gibbericeps* should be separated from *regulorum,* but Crowned Cranes are non-migratory and some geographic variability is to be expected. An example of minor geographic variation is the occurrence of red patches between the white of the face. The lower red patch was observed on all birds in Uganda which were examined closely, but is not reported for Crowned Cranes in Kenya, although a bird which I observed in 1972 at Lake Naivasha, in south central Kenya, had a pink patch below the white, which suggests that it was either an intermediate form, or an immature of the Ugandan type (see Table 1).

Acknowledgements: Benny Wanjala helped me to obtain young Crowned Cranes, and he and several other Makerere students assisted in their feeding and maintenance. Peter Britton, Leslie Brown, G. R. Cunningham-van Someren and Bob Ricklefs kindly gave me their comments on a draft of the paper.

References:

Britton, P. L. 1970. Some non-passerine bird weights from East Africa. *Bull. Brit. Orn. Cl.* 90: 142–144, 152–154.

Brown, L., Newman, K. & Urban, E. In press. *Birds of Africa.* Vol. 1. Academic Press: London.

Clarke, H. W. & Amadei, L. 1969. Breeding in captivity of the Black-necked Crowned Crane. *Avicultural Magazine* 75: 37–39.

Mackworth-Praed, C. W. & Grant, C. H. B. 1952. *Birds of Eastern and North-Eastern Africa.* Vol. 1. Longmans: London.

Miller, R. S. 1973. The brood size of Cranes. *The Wilson Bull.* 85: 436–441.

Miller, R. S. & Hatfield, J. P. 1974. Age ratios of Sandhill Cranes. *J. Wildlife Management* 38: 234–242.

Pomeroy, D. E. 1980. Aspects of the ecology of Crowned Cranes *Balearica regulorum* in Uganda. *Scopus* 4: 29–35.

Ricklefs, R. E. 1973. Patterns of growth in birds. II. Growth rate and mode of development. *Ibis* 115: 177–201.

Snow, D. W. (Ed.) 1978. *An Atlas of Speciation in African Non-passerine Birds*. Trustees of the British Museum: London.
Stresemann, E. & Stresemann, V. 1966. Die Mauser der Vögel. *J. Orn.* 107: 1–445.
Walkinshaw, L. H. 1964. The African Crowned Cranes. *Wilson Bull.* 76: 355–377.

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On the Wedge-tailed Green Pigeon *Treron sphenura etorques* of Sumatra

by Carlo Violani

Received 7 March 1980

Historical notes

In 1879, describing the birds of Sumatra, Tommaso Salvadori examined 3 male specimens of a Wedge-tailed Green Pigeon "*Sphenocercus korthalsii* (S. Müll.)?" which had been obtained and sexed by the Italian explorer Odoardo Beccari on Mount Singgalan (0° 24′ S. 100° 20′ E), West Sumatra, during the previous year. Salvadori noticed that all 3 birds were lacking the rufous-orange breast band of ♂ *korthalsi* of Java; therefore, relying on Beccari's signed indication of sex on their labels, he proposed the name of *Sphenocercus etorques* for this "different species, perhaps a new one" (Salvadori 1879: 244). He also remarked that Sumatra was wrongly claimed as a type locality for *korthalsi* by both C. L. Bonaparte (in addition to "Malasia") and G. R. Gray, the latter being probably misled by 2 orange-breasted male specimens in the British Museum (Nat. Hist.) (BMNH), erroneously labelled "Sumatra" and received from Leyden Museum (see Discussion).

By 1893, however, Salvadori had changed his mind, as, in *Cat. Birds Brit. Mus.* 21: 11, under the species "*Sphenocercus korthalsii*", he wrote: "The specimens in Beccari's collection from Mt. Singalane, W. Sumatra (*S. etorques* Salvad.), were most probably not fully adult birds. Hab. Java and Sumatra."

Since then, as far as I know, the matter has never been raised again: *Sph. etorques* Salvad. is listed as a synonym of *korthalsi* Bp. by Robinson & Kloss (1918: 103-104), by Chasen (1935: 11) and is completely ignored in Peters' Volume 3 (1937). However, after examination of the available museum skin material, I believe it justified to re-propose the name *Treron sphenura etorques* (Salvadori) for the Sumatran taxon. (Reasons for merging the genus *Sphenurus* Swainson 1837=*Sphenocercus* G. R. Gray 1840 into *Treron,* given by Husain, are summarized by Goodwin (1970: 297).)

Soon after their description, the Salvadori syntypes—3 fully adult ♂♂ indeed—found their way into the richest Italian bird collections of the time. Two of them, Beccari's Nos. 24 and 113, went to Genoa Museum of Natural History, where they are still preserved as skins today. The first bears the following (translated) notes written by Beccari from the freshly killed bird, on the back of its label: "Iris bright blue; base of bill, same [colour]; feet coral. Eats *Melastoma* fruit.".

The third specimen, Beccari's No. 10, was acquired by Count Ercole Turati of Milan, whose splendid ornithological collection was bequeathed, after his death in 1881, to the Civic Museum of Natural History, Milan. During the night of 13/14 August 1943, an air raid started the great fire which destroyed the Milan Museum and most of the scientific material which had not yet been removed to safety, the *etorques* syntype unfortunately amongst it.

A revision of the ornithological collections in the Genoa Museum for the preparation of the Bird Type Catalogue by Arbocco, Capocaccia & Violani (1979) reopened the question again. Thanks to the great experience of Derek Goodwin and to the kindness of the scientific staff of both Genoa Museum and the BMNH, it was possible to examine and compare one of the two extant Salvadori syntypes (MSNG C.E. 9661) with the available ♂ material at Tring (10 August 1979). The same Salvadori syntype was examined a few weeks later by Dr. G. F. Mees of Leyden Museum, where a further ♂ bird from Sumatra was also traced. In October 1979 I was able to study a sixth specimen from Sumatra in the American Museum of Natural History (AMNH), New York.

Discussion

Male specimens of *Treron sphenura korthalsi* from Java are relatively well represented in the BMNH collection at Tring, while the AMNH possesses only 2 individuals, one from Java and one from Lombok Island; they all show a conspicuous rufous-orange breast band and reddish-cinnamon undertail coverts, e.g. BMNH 1927.4.18.19, from W. Java. The orange-breasted specimen "B. Mus. N.18", also at Tring, although labelled "Sumatra" is undoubtedly a *korthalsi* from Java and it is to be identified as one of the 2 birds listed by Gray (Salvadori 1879: 244) which were received in exchange from Leyden Museum; the other specimen is no longer in the same collection. It was on the basis of this mislabelling that confusion about *korthalsi*'s true distribution range started.

Although based on only 6 individuals from Genoa, Leyden, Tring and New York Museums, ♂♂ from Sumatra apparently show constant features in their colouring : the orange breast band is always lacking (the Latin "*etorques*" means "without a collar") and the undertail coverts always have a reddish-cinnamon tinge. In 2 specimens, BMNH 1920.6.29.30 and AMNH 548150, the breast plumage has a very faint golden-green wash. These differences are enough to restore the name *Treron sphenura etorques.*

Treron sphenura robinsoni, from the Malayan Peninsula, was described by Ogilvie-Grant in 1906. Judging from the 3 ♂♂ at Tring (an adult syntype and 2 "less adult" paratypes, not perfectly prepared), this subspecies lacks the orange breast band as well, and can be kept (temporarily) separated from *etorques* on the ground of its general greyer-green hue and of the different colouring of the undertail coverts, which are a pale, straw-like yellow, washed with cinnamon.

Measurements of all the material examined do not seem to show a significant range of variation; in particular, tail measurements taken from old museum specimens are not always reliable, due to the technical difficulty of reaching the insertion of the rectrices among the thick rump plumage, without damaging the skin. However, it must be stressed that a greater number of specimens is desirable for a satisfactory study, besides, obviously, much more ecological and ethological observation of these taxa *in vivo.*

In conclusion, if *robinsoni* has been kept racially (and reasonably) distinct, there is even stronger reason for separating *etorques* from *korthalsi*; however, judging at least from the scarce material now available, it is not possible to state definitely the subspecific differences which exist between *etorques* and *robinsoni;* should they be subspecifically equated, then *etorques* Salvadori 1879 should have priority over *robinsoni* Ogilvie-Grant 1906.

Material examined:

TRERON SPHENURA ETORQUES (Salvadori)

Civico Museo di Storia Naturale "G. Doria", Genoa, Italy.

1) adult ♂, Mt. Singgalan, Bella Vista, W. Sumatra, 21.vi.1878, collected by O. Beccari (Beccari's No. 24), MSNG C.E. 9661. Culmen from skull: 22; wing: 163; tarsus: 26; tail: 129 mm.

2) adult ♂, Mr. Singgalan, Bella Vista, W. Sumatra, 9.viii.1878, coll. O. Beccari (Beccari's No. 113), MSNG C.E. 9662. Culmen from skull: 21 (tip of bill damaged); wing: 162; tarsus: 26; tail: 124 mm.

Note: Both birds are syntypes of *Sphenocercus etorques* Salvadori 1879. Measurements of this form given by Salvadori (1879) consist of an average number calculated from 3 specimens, one of which is now lost (see text).

British Museum (Nat. Hist.).

3) adult ♂, Korinchi Peak, Sumatra, 4.v.1914, coll. H. C. Robinson & C. B. Kloss; BMNH 1920.6.29.18. Culmen from skull: 20·5; wing: 172; tarsus: 26; tail: 102 mm.

4) adult ♂, Korinchi Peak, Sumatra, 3.v.1914, coll. H. C. Robinson & C. B. Kloss; BMNH 1920.6.29.20. Culmen from skull: 22; wing: 165·5; tarsus: 26; tail: 103 mm.

Rijksmuseum van Natuurlijke Historie, Leyden, The Netherlands.

5) adult ♂, Goeneng Dempo, c. 3000 m, Pasemah-landen, Palembang, Sumatra, xi.1918, coll. C. J. Batenburg; Cat. no. 4 (reg. no. 5245). Culmen from skull: 22; wing: 167; tarsus: 24; tail: 103 mm. *Note:* unsexed specimen, but doubtless ♂, as it shows purplish-brown inner-wing coverts.

American Museum of Natural History.

6) adult ♂, Korinchi Peak, Sumatra, 10,000 ft., 5.v.1914, coll. H. C. Robinson & C. B. Kloss; AMNH548150 ex Rothschild Collection. Culmen from skull: 20; wing: 165; tarsus: 25; tail: 148 mm.

TRERON SPHENURA KORTHALSI (Bp.)

British Museum (Nat. History).

1) adult ♂, Handang Badak, Gede, W. Java, 4.iii.1916, coll. H. C. Robinson; BMNH 1927.4.18.19. Culmen from skull: 20; wing: 171·5; tarsus: 25; tail: 118 mm.

2) adult ♂, locality "Sumatra" on label, ex Coll. Leyden Museum; N.18 B. Mus. Culmen from skull: 21; wing: 167; tarsus: 24·5; tail: 114 mm.

American Museum of Natural History.

3) adult ♂, Mt. Gedeh, 4000 ft., Java, Jan. 1898, coll. E. Prillwitz; AMNH 548153 ex Rothschild Collection. Culmen from skull: 21 (tip of bill damaged); wing: 174; tarsus: 28; tail: 151 mm.

4) adult ♂, Lombok Island, Rindjani Bendera, 4000 ft., May 1896, coll. A. Everett; AMNH 548154. Culmen from skull: 21; wing: 165; tarsus: 25; tail: 154 mm.

TRERON SPHENURA ROBINSONI (Ogilvie-Grant)

British Museum (Nat. Hist.)

1) adult ♂, Gunong Tahan, 3300 ft., Malay Peninsula, 2.vi.1905, coll. H. C. Robinson; BMNH 1906.7.23.366. Culmen from skull: 20; wing: 173; tarsus: 23; tail: 105 mm.

2) "less adult male specimen" (O.-Grant, 1906), Gunong Tahan, Malay Peninsula, 1.vi.1905, coll. H. C. Robinson; BMNH 1906.7.23.368. Culmen from skull: 21; wing: 173·5; tarsus: 22; tail: 102 mm.

3) "less adult male specimen" (O.-Grant, 1906), Gunong Tahan, Malay Peninsula, 8.vi.1905, coll. H. C. Robinson; BMNH 1906.7.23.369. Culmen from skull: 21·5; wing: 164·5; tarsus: 22·5; tail: 105 mm.

Note: The first of these 3 birds is the ♂ syntype of *Sphenocercus robinsoni* Ogilvie-Grant 1906; the following 2, also mentioned in the original description, are to be considered paratypes.

Acknowledgements: I am particularly indebted to Derek Goodwin (BMNH) for his invaluable help and assistance during my visit to Tring and for his useful comments on the draft of this paper. I am also grateful to Dr. G. F. Mees, for providing me with details about the *etorques* specimen in Leyden Museum, and to the Scientific Staff of Tring, Genoa and New York Museums, for kindly granting me access to their material during my studies.

References:

Arbocco, G., Capocaccia, L. & Violani, C. 1979. Catalogo dei Tipi di Uccelli del Museo Civico di Storia Naturale di Genova. *Ann. Mus. Civ. St. Nat. Genova* 82: 184–265.

Chasen, F. N. 1935. A Handlist of Malaysian Birds. *Bull. Raffles Mus., Singapore* 11.

Goodwin, D. 1970. *Pigeons and Doves of the World.* Brit. Mus. Nat. Hist. 2nd Edn: London.

Ogilvie-Grant, W. R. 1906. Description of new Malayan birds. *Bull. Brit. Orn. Cl.* 19: 9–12.

Robinson, H. C. & Kloss, C. B. 1918. Results of an Expedition to Korinchi Peak, Sumatra. Part II. Vertebrates: Birds. *Journ. Fed. Malay. St. Mus.* 7: 81–284.

Salvadori, T. 1879. Catalogo di una collezione di uccelli fatta nella parte occidentale di Sumatra dal Prof. Odoardo Beccari. *Ann. Mus. Civ. St. Nat. Genova* 14: 169–253.

Salvadori, T. 1893. *Catalogue of the Birds in the Collections of the British Museum.* Vol. 21: Columbae, or Pigeons. London.

Postscriptum: Dr. S. Somadikarta, of Museum Zoologicum Bogoriense (MZB), Bogor, Indonesia, kindly informs me (9 November 1980) that " in the collection of MZB there is a pair of *S. etorques* collected by J. J. Mendon from Mt. Dempo (1800m), SW Sumatra, on 12 July 1936. These specimens were, wrongly, labelled as *S. korthalsi.* The adult ♂ specimen from Mt. Dempo (MZB No. 15508) *does not* show the orange-rufaus collar, and the measurements (in mm) are: wing 160, tail 103, bill 17, and tarsus 22."

Address: Dr. Carlo Violani, Istituto di Ecologia Animale ed Etologia, Universita degli Studi, Pavia 27100, Italy. *Present address:* Dept. of Zoology, Nelson Biol. Lab., Rutgers University, New Brunswick, New Jersey 08903 U.S.A.

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A new subspecies of *Halcyon chloris* from an isolated population in eastern Arabia

by Graham S. Cowles

Received 15 March 1980

In March 1971, accompanied by Major M. D. Gallagher, I visited a coastal area of eastern Arabia called Khawr Kalba (also spelt Khor Kelba) which is between the villages of Kalba to the north and Murair to the south, on the Batinah coast in Sharjah State, United Arab Emirates, close to the border of the Sultanate of Oman (Fig. 1,C). The area has been mainly formed by the delta of the Wadi Rumh and is comprised of sand and alluvial mud which supports mangrove swamps at the edges of small inlets close to the sea shore. Here we observed several kingfishers in the mangroves, which at the time appeared similar to the White-collared Kingfisher *Halcyon chloris abyssinica.* Two specimens were collected and preserved as study skins, and are now in the British Museum (Nat. Hist.), Tring.

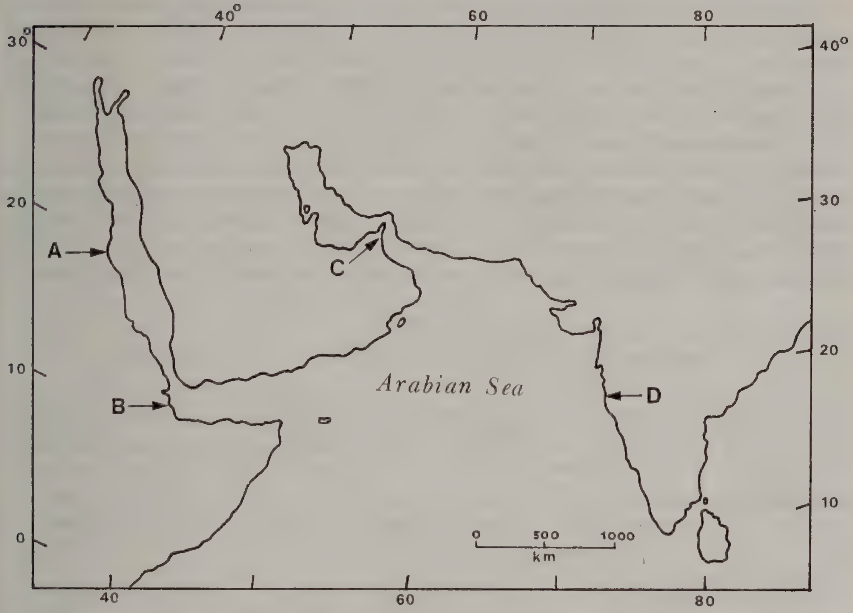

Fig. 1. Distribution of the *Halcyon chloris* subspecies nearest to Arabia. A–B, *abyssinica* (coast at, and between, Suakin and Zeila). C, *kalbaensis* (Khawr Kalba, Arabia). D, *vidali* (Ratnagiri district, Konkan, India).

Halcyon chloris was first reported from Arabia by Stanford in 1973, 19 years after Meinertzhagen (1954) wrote 'It is remarkable that no race of *H. chloris* occurs in Arabia'. The kingfisher, a ♀, was actually collected in January 1962 by Lt. Col. W. Stanford, from a mangrove swamp, thought at first to be at Murair but later corrected to Khawr Kalba, the same locality which Gallagher and I visited 9 years later. Stanford's single specimen, now in the B.M. (N.H.), Tring, is similar to and was originally considered to be *H. chloris abyssinica,* a subspecies with a very restricted distribution along part of the Red Sea west coast (Fig. 1, A-B), from Suakin south to Zeila on the western coast of the Gulf of Aden (Peters 1945, Archer & Godman 1961). It is perhaps vagrant to southern Somalia and Kenya (Fry 1978), although this latter record is now in some doubt. With the addition of 2 further specimens from Khawr Kalba, certain constant differences are now evident between the White-collared kingfishers of the Red Sea population and those of eastern Arabia, enough to warrant separating them into 2 subspecies.

Halcyon chloris kalbaensis subsp. nov.

Holotype. Adult ♂, collected 24 March 1971 by G. S. Cowles (collector's number GG181), at Khawr Kalba (25°01′N, 56°22′E), Sharjah State, United Arab Emirates, eastern Arabia. B.M. (N.H.) reg. no. 1977.18.9.

Description. Similar to *H.c. abyssinica* but differs in having a well defined white superciliary stripe extending from the sides of the forehead to above and past the eye. Above the ear coverts the white superciliary is suffused with blue-tipped feathers, giving a streaked area of light blue-green and white.

After progressing along the side of the head the superciliary joins the white based feathers of the nape, above the black nuchal band. Bill smaller than *abyssinica*. The black of the lores is noticeably less in area than that of *abyssinica,* almost to the point of being absent. The upper tail coverts and rump are more blue-green than the blue of *H. c. abyssinica* and *H. c. vidali*.

Measurements. Table 1 indicates an overlap in the wing and tail measurements of *H. c. kalbaensis* and *H. c. abyssinica*. Additional measurements have been obtained from a collection of wings, tails and heads recently presented to the B.M. (N.H.) by the Harrison Zool. Museum. These were collected by Major C. J. Seton-Browne and taken from specimens shot at Khawr Kalba in June 1968. These help to substantiate measurements from the otherwise small series of study skins. The heads of *H. c. kalbaensis* taken in June 1968 support the Table in showing that the bill is smaller than that of *H. c. abyssinica*. A certain amount of annual wear and regrowth apparently takes place in the mandibles of this species. One head from the Seton-Browne material has an exceptionally long bill of 53 mm which appears to be overgrown at the tip of the upper mandible. Others in the series are worn at the tip and cutting edge, but consistently to a length of 47 mm ± 1 mm.

TABLE 1

Measurements (mm) of *Halcyon chloris kalbaensis* and *H. c. abyssinica*

	Wing	Tail	Upper mandible from skull	Lower mandible from symphysis to tip	Max. depth of bill
H. c. kalbaensis Holotype ♂	102.0	68.0	46.0	36.0	11.5
Paratype ♀	98.5	67.0	48.0	37.5	12.5
♀	105.5	65.0	48.0	38.0	12.5
Seton-Browne material (see text) (*kalbaensis*)	(n=6)	(n=3)	(n=5)	(n=5)	(n=5)
range	100–106	65–66	46–48 (one 53)	34–37	11.0–12.0
mean	104.5	66.5	48.0	35.5	11.5
H. c. abyssinica ♂	105.0	65.0	50.0	42.0	15.0
♀	105.0	65.0	52.0	43.0	14.0
♀	105.0	67.0	50.0	40.0	14.0
?	105.5	67.0	50.0	41.0	14.0

Paratypic variation. Stanford's female has the white collar of the hind neck mottled with black due to immaturity, as described by Mackworth-Praed & Grant (1957).

Range. Apparently confined to the coastal mangrove swamps at Khawr Kalba. The nearest population of *H. chloris* is the race *abyssinica,* about 1900 km across Arabia to the southwest, on the western coast of the Red Sea, and *H. c. vidali* in the opposite direction, about 2000 km to the southeast, across the Arabian Sea in the Ratnagiri district, south of Bombay, India (Fig. 1, D). Unlike *H. c. kalbaensis*, *H. c. vidali* has the black nuchal band generally absent, the colour of the wing is a deeper shade of blue and the wing is longer (♂s 110–114 mm). The white supraloral spot is small and the superciliary ill-defined, or in some specimens absent.

Material examined. Two ♂s and 1 ♀ from the type locality. These were compared with 1 ♂, 2 ♀s and one unsexed skin of *abyssinica,* and 4 ♂s and 3 ♀s of *vidali*. Skins of 34 of the 49 subspecies were examined. Descriptions of the remaining 15 not represented in the B.M. (N.H.) were obtained from the literature.

Etymology. Named after the village close to the type locality, Kalba.

Status. Stanford (1973) recorded the Kalba White-collared Kingfisher as 'local, and not found at similar mangrove habitats elsewhere on the Batinah, or Trucial coast' (United Arab Emirates). The specimens were collected in January, March and June. Stanford (1973) observed it in May and July and it has been seen during most other months of the year; during one day in June 1968 up to 20 individuals were counted at Khawr Kalba by Lt. S. Strickland. There seems little doubt that this is a resident population, and nesting in June is said to have been seen.

Voice. Stanford describes the call as a noisy 'Kee-kee-kee', similar to that of a young hawk.

Food. The stomach of the holotype contained small crabs.

Colour of bare parts. These were noted at the time of death from the 2 ♂s. Iris: dark orange brown. Feet: pale grey. Inside of mouth: pale grey. Bill: upper mandible black; lower mandible black at tip and along cutting edge, the remaining basal two-thirds, grey. The bill colour appears not to have been properly recorded for *H. c. abyssinica,* but in *H. c. vidali* the basal two-thirds of the lower mandible is recorded as pinkish or yellowish-white (Baker 1927, Ali 1970). The grey bill colouring of this isolated Arabian population may therefore be significant. The colour of the feet agree with the 'grey' given by Mackworth-Praed & Grant (1957) for *H. c. abyssinica,* but this is in contrast to the 'dark brown' described by Archer & Godman (1961). Baker (1927 and Ali (1970) have recorded 'slaty black or plumbeous' for the Indian race *H. c. vidali*. The colours may, of course, have changed if they were recorded some hours after death by the collectors, but in the study skins before me now, a colour difference can still be seen to exist between the bills of *H. c. kalbaensis* and the other subspecies mentioned.

Field characters. Colour transparencies taken by W. Wyper at the type locality of *H. c. kalbaensis* shows the white superciliary eye strip is quite distinctive in the field.

The species *H. chloris* is distributed over a wide geographical area and about 49 subspecies are at present recognised. It extends from the Red Sea coast (*abyssinica*) at the western extremity of its range, to eastern Arabia (*kalbaensis*), southern Asia, the Philippines and the Malay Archipelago, New Guinea, northern Australia, and through the Polynesian islands to Samoa, which is the extreme eastern limit of its range. Mayr (1931) remarked that often the birds at the periphery of the distribution of a species show pronounced differences in appearance, and this is true of *abyssinica* and its nearest geographical neighbour, the new subspecies *kalbaensis*. These 2 can be distinguished from all the other subspecies by clearly defined differences. For example, in some races various shades of buff replace or tint parts of the pure white areas of plumage found in *kalbaensis* and *abyssinica*. A few other forms have, like *kalbaensis* and *abyssinica,* the light parts white rather than buff but differ from them either by having the white superciliary stripe absent, or shorter, (except *kalbaensis*) or by having extensive areas of white on the crown as in *pealei* from Samoa. Other races show differences in size and overall plumage coloration. This strongly suggests that the affinities of *kalbaensis* lie closer to the west, *abyssinica,* than to *vidali*, or other subspecies from the eastern part of the *H. chloris* range.

Acknowledgements. I am most grateful to General Sir Roland Gibbs, GCB, CBE, DSO, MC, for the invitation to join the Joint Services Training Exercise *Lapwing* in eastern Arabia. I am greatly indebted to Major M. D. Gallagher, and the men of Exercise *Lapwing,* without whose help my visit to Kalba would not have been possible. I thank too Mrs. F. E. Warr for making the records of the *Gulf Birdwatchers* available to me.

References:

Ali, Salim, 1970. *Handbook of the Birds of India and Pakistan.* Vol. 4: 95-98. Oxford University Press.

Archer, G. & Godman, E. M. 1961. *Birds of British Somaliland and the Gulf of Aden.* Vol. 3: 748–750. Oliver & Boyd: Edinburgh & London.

Baker, E. C. Stuart. 1927. *Fauna of British India* (2nd ed.). Vol. 4: 275–277. Taylor & Francis: London.

Fry, C. H. 1978. Alcedinidae. *In* Snow, D. W. (ed.): *An Atlas of Speciation in African Non-passerine Birds.* London: British Museum (Nat. Hist.).

Mackworth-Praed, C. W. & Grant, C. H. B. 1957. *Birds of Eastern and North-Eastern Africa* (2nd ed.). Vol. 1. Longmans: London.

Mayr, E. 1931. Birds collected during the Whitney South Sea Expedition. XII. Notes on *Halcyon chloris* and some of its subspecies. *Am. Mus. Novit.* No. 469: 1–10.

Meinertzhagen, R. 1954. *Birds of Arabia.* Oliver & Boyd: Edinburgh.

Peters, J. L. 1945. *Check-list of Birds of the World.* Vol. 5: 207. Harvard University Press: Cambridge, Mass.

Stanford, W. 1973. A note on the birds of Oman and the Trucial States 1954–1968. *Army Bird-Watching Society Periodic Publication.* No. 1: 1–25.

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A new subspecies of *Diglossa (carbonaria) brunneiventris*

by Gary R. Graves

Received 25 March 1980

While investigating the Carbonated Flower-piercer *Diglossa carbonaria* complex, Zimmer (1929) stated "... I am not able, therefore, to separate the Colombian and Peruvian birds *brunneiventris* even subspecifically except on the sole ground of geographic isolation, which is not adequate for racial distinction, and . . . the size of the Colombian specimens falls well within the range of variation of my Peruvian specimens". Subsequent treatments of this group (Hellmayr 1935, Vuilleumier 1969) have maintained *brunneiventris* as a polytopic subspecies with disjunct populations at the north ends of the Western and Central Cordilleras in northern Colombia some 1500 km north of its extensive Peruvian range.

During a reappraisal (Graves 1980) of the *D. carbonaria* superspecies, I examined 358 specimens of *brunneiventris* including some 40 individuals from Colombia. These latter birds appear to be subspecifically distinct. I propose to call them

Diglossa brunneiventris vuilleumieri subsp. nov.

Type: United States National Museum No. 436798; adult male, testes enlarged; collected by M. A. Carriker, Jr. at Paramo Frontino, Department of Antioquia, Colombia, elevation 11,880 ft (c. 3620 m), on 21 August 1951.

Diagnosis: Differs from Peruvian *brunneiventris* in being significantly smaller (Table 1). Black throat patch seems to average proportionally larger.

Measurements of type (mm): Wing (chord) 62.0, tail 53.3, tarsus 20.1, culmen (from anterior edge of nostril) 7.9.

Range: Restricted to *ceja* and timberline shrubland at the northern ends of the Western and Central Cordilleras in the Department of Antioquia, Colombia.

Adult specimens examined for comparative purposes: D. b. vuilleumieri. Colombia: Paramillo, 2 ♀♀ (USNM); 6 ♂♂, 1 ♀ (AMNH); 2 ♂♂ (MCZ); 1 ♀ (FMNH); Paramo Frontino, 4 ♂♂, 1 ♀ (USNM); Hcda. Zulaiba, 6 ♂♂, 1 ♀ (USNM). *D. b. brunneiventris.* Peru: Cutervo-Lajas transect, 8 ♂♂, 5 ♀♀ (LSUMZ); NE Chota, 8 ♂♂, 3 ♀♀ (LSUMZ). Bolivia: Hichuloma, 4 ♂♂, 1 ♀ (ANSP); 7 ♂♂ (AMNH).

Etymology: I take pleasure in naming this new form for François Vuilleumier in recognition of his contributions to Andean evolutionary biology.

TABLE 1

Measurements of *Diglossa brunneiventris* from northern Colombia.

		Mean (mm) ± SE (n) of males			
	Locale	Wing	Tail	Tarsus	Culmen
D.b. vuilleumieri[1]	A	66.56 ± 0.62 (11)	57.88 ± 0.73 (12)	20.48 ± 0.16 (12)	7.88 ± 0.11 (12)
D.b. vuilleumieri[2]	B	66.60 ± 0.51 (6)	57.93 ± 0.59 (6)	20.12 ± 0.20 (6)	7.58 ± 0.26 (5)
D.b. brunneiventris[3]	C	68.14 ± 0.55 (8)	58.44 ± 0.88 (7)	21.14 ± 0.18 (8)	8.08 ± 0.15 (8)
D.b. brunneiventris[4]	D	68.19 ± 0.66 (8)	58.90 ± 0.90 (7)	21.39 ± 0.14 (8)	8.29 ± 0.10 (8)
D.b. brunneiventris	E	71.33 ± 0.70 (9)	61.25 ± 0.51 (10)	21.17 ± 0.21 (10)	7.70 ± 0.10 (11)
	*p	0.02	NS	0.001	0.01

A = Paramillo–Frontino, Dpto. Antioquia, Colombia, 7° N.
B = Hcda. Zulaiba, Dpto. Antioquia, Colombia, 7° N.
C = Cutervo–Lajas transect, Dpto. Cajamarca, Peru, 6° 30′ S.
D = 7 km N, 3 km E Chota, Dpto. Cajamarca, Peru, 6° 30′ S.
E = Hichuloma, Dpto. La Paz, Bolivia, 16° 30′ S.

*Statistical comparison of 1 versus 2 and 3 versus 4 were not significantly different. The pooled values (*vuilleumieri* 1 & 2 vs *brunneiventris* 3 & 4) were compared using a two-tailed Student's "t" test.

That *vuilleumieri* is subspecifically distinct is not surprising in view of the wide geographical separation between Peruvian and Colombian populations. The intervening region is occupied by the entirely black *D. humeralis aterrima*. Although subspecies are not evolutionary units (*sensu* Mayr 1969), geographical isolates often have unique evolutionary histories. *D. b. vuilleumieri* has probably been geographically isolated since the last glacial extreme (21,000–13,000 years B. P. – see Graves 1980). From the available material there appears to be little difference between populations of *vuilleumieri* on either side of the Cauca Valley (Table 1). However, *vuilleumieri* is significantly smaller (wing, tarsus and culmen length) than the nearest population of nominate *brunneiventris* in northern Peru. Included for comparison in Table 1 is a sample of nominate *brunneiventris* from the southernmost part of its range in northwest Bolivia. A preliminary examination of unpublished data suggests that nominate *brunneiventris* is latitudinally clinal in size, the size increasing with distance from the equator.

Acknowledgements: I am grateful to the curators of the American Museum of Natural History (AMNH), United States National Museum (USNM), Field Museum of Natural History (FMNH), Museum of Comparative Zoology (MCZ), Louisiana State University Museum of Zoology (LSUMZ), and Academy of Natural Sciences of Philadelphia (ANSP) for the loan of specimens. J. P. O'Neill and J. V. Remsen offered helpful comments.

References:
Graves, G. R. 1980. Patterns of speciation in the Carbonated Flower-piercer (*Diglossa carbonaria*) complex of the Andes. Unpublished MSc. thesis, Louisiana State University.
Hellmayr, C. 1935. Catalogue of birds of the Americas and adjacent islands . . . *Field Mus. Nat. Zool. Ser.* 13: 1258.
Mayr, E. 1969. *Principles of Systematic Zoology.* McGraw-Hill: New York.
Vuilleumier, F. 1969. Systematics and evolution in *Diglossa* (Aves, Coerebidae). *Amer. Mus. Novit.* 2381, 44 pp.
Zimmer, J. T. 1929. Variation and distribution in two species of *Diglossa*. *Auk* 46: 21–37.

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Rediscription of *Halcyon bougainvillei excelsa* Mayr, 1941

by John E. du Pont and David M. Niles

Received 1 April 1980

During the American Museum of Natural History's Whitney South Sea Expedition, a single specimen of *Halcyon bougainvillei* was collected on 26 July 1927 at 4000 ft, inland from Cape Hunter on the south shore of Guadalcanal Island, Solomon Islands. This specimen, which was sexed by R. H. Beck, the collector, as a female, was designated by Mayr (1941, *Amer. Mus. Novit.* No. 1152: 3) as the holotype (and only known specimen) of a new subspecies, *H. b. excelsa*.

Halcyon bougainvillei is sexually dimorphic in colour. Comparison of the holotype of *excelsa* with nominate *bougainvillei* and with an additional specimen from Guadalcanal now in the British Museum indicates that the holotype was probably wrongly sexed, and was an immature male.

This assessment is based upon the following (capitalized colour names are from Smithe (1975) *Naturalist's Color Guide*). The back of the holotype is, in the main, very dark Greenish Olive, becoming Blackish Neutral Gray anteriorly. The back of the second specimen from Guadalcanal, an adult female taken on 6 July 1953, is uniformly bright Olive-Green. In possessing an essentially olive back, rather than the (presumably – as in *bougainvillei*) deep blue back of adult males, the holotype does seem to be in female-like plumage. The striking difference in brightness between the (very dark) back of the holotype and that of the adult female *excelsa* implies to us, however, that the holotype was a young male. That it was immature is further suggested by its being very faintly barred on the sides of its breast, in this characteristic matching immatures of the closely related *H. concreta*.

The foregoing implies, at the least, that some of the characters attributed to *excelsa* by Mayr may have been based upon the holotype's having been immature or wrongly sexed or both. Nevertheless, *excelsa* is probably a valid race. As Mayr noted, *excelsa* is paler ventrally than *bougainvillei:* the holotype of *excelsa* is pale Cinnamon to Cream Color below; the 1953 bird is Cream Color to virtually white; *bougainvillei* are uniformly deep Cinnamon. Dorsally, adult females of the 2 populations appear to differ as follows: the crown and nape of *bougainvillei* is uniformly Tawny, that of the specimen of *excelsa* is paler, especially on the nape where the bird is Cinnamon. The back of *bougainvillei* is Olive-Green suffused with Tawny, that of the *excelsa* is nearly pure Olive-Green. To our knowledge no specimens of adult male *excelsa* exist, and comparison of the males of the two races must await further collecting on Guadalcanal.

We are most grateful to Ian C. J. Gailbraith of the British Museum (Natural History) and to Wesley E. Lanyon of the American Museum of Natural History for lending us specimens in their care. We thank Kenneth C. Parkes for advising and commenting upon the manuscript.

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Pectoral Sandpiper *Calidris melanotos* and Lesser Yellowlegs *Tringa flavipes* in Zambia

by P. B. Taylor

Received 8 April 1980

During the period November 1978 to November 1979 I recorded 2 occurrences of Pectoral Sandpiper *Calidris melanotos* and one of Lesser Yellowlegs *Tringa flavipes* at localities in the Copperbelt Province of Zambia. These are the first reported occurrences of Nearctic vagrants in Zambia.

PECTORAL SANDPIPER *Calidris melanotos*. The first bird was seen at 06.00 hours on 12 November 1978 at Kafubu Lake, Ndola (13°02'S, 28°35'E). The lake is artificially dammed and is the main water supply for the city of Ndola. At the end of the dry season the water level falls rapidly and much mud is exposed at the point where the Kafubu River enters the lake. This area attracts large numbers of southward-moving Palaearctic waders and it was here that the Pectoral Sandpiper was seen, feeding alongside Curlew Sandpipers *Calidris ferruginea* in wet mud and shallow water with grass tufts. It was later seen with Ruff *Philomachus pugnax,* Wood Sandpiper *Tringa glareola*, Marsh Sandpiper *T. stagnatilis,* Little Stint *Calidris minuta* and Ringed Plover *Charadrius hiaticula*. Close observations were made in good light until about 08.00 hours and the bird was photographed.

I am satisfied that this bird was a Pectoral Sandpiper and not a Sharp-tailed Sandpiper *Calidris acuminata*, the breast pattern, leg colour, tail and call serving to distinguish it from Sharp-tailed. The breast had a strong buff wash and heavy dark streaks, contrasting with the pale unmarked chin, and the breast pattern ended abruptly to give white lower breast, belly and undertail coverts. The legs were ochre and were rather short, this feature making the bird easy to pick out among the taller-standing Wood and Curlew Sandpipers. The rump and centre of the tail were very dark, the outer tail feathers were paler brown and the sides of the rump were white. The dark central tail feathers were a little longer than the outer ones. The call was a low "prrrrt", sometimes repeated. The observed plumage features agree with those given in Prater *et al.* (1977) for first-year birds. The bird was found at the same locality later on the same day by C. Carter, who confirms identification, but was not present that evening and was not seen again. Colour transparencies have been examined by R. J. Dowsett who (*in litt.*) confirms identification.

The second Pectoral Sandpiper was present at Makoma Sewage Ponds, Luanshya (13°07′S, 28°22′E) at 11.00 hours on 24 November 1979. It was first seen at the edge of a tank feeding in shallow water with grass on a hard substrate, and was alongside Wood Sandpiper. Later it rested on dried cut grass on the short-grassed track between two tanks. It appeared tired, was unafraid and was unwilling to fly, allowing approach to within 12 m. When active it fed continuously, picking food from the water's edge. It was closely observed for 45 minutes in excellent conditions. The bird was in most features almost exactly similar to the 1978 bird, though the less markedly pale edges to the upperside feathers and the rather greyish wash on the breast suggested that it may have been an adult. I returned to the ponds at 15.00 hours with R. Casalis de Pury, who confirmed the identification. The bird by this time appeared rested and refreshed; it was much less approachable and flew more readily. It was photographed and the colour transparencies show plumage features well, including tail and rump in flight and the longer dark central tail feathers. R. Casalis de Pury confirms identification.

LESSER YELLOWLEGS *Tringa flavipes*. At 18.00 hours on 21 January 1979 I found a Lesser Yellowlegs at Kanini Sewage Works, Ndola (12°59′S, 28°38′E). The settling ponds at Kanini are small, have natural banks and normally hold drying sludge, only occasionally being completely flooded. Such habitat attracts good numbers of wintering Wood and Green Sandpipers *Tringa ochropus,* Little Stint and Ruff. When first seen, the Lesser Yellowlegs was wading in the only flooded tank alongside Wood Sandpiper, Greenshank *T. nebularia* and Red-billed Teal *Anas erythrorhynchos*. The bird was present continuously throughout the remainder of January and irregularly until 18 February, during which period I was able to observe it frequently and to photograph it.

The bird was slim and graceful, with long bright yellow legs and a slender black bill; the well-marled pale superciliary stripes met in a characteristic "V" on the forehead; the white rump patch was square and the tail was white with narrow dark bars. The call was a soft plaintiff "cu" and when alarmed the bird uttered a more strident "klew" or mellow "teu". In late January I noticed a gap in the outer primaries of one wing and on 18 February this gap was no longer visible.

The bird was seen by at least 10 other observers, including C. Carter (who also photographed it), R. Casalis de Pury and R. Stjernstedt. Colour transparencies have been examined by P. J. Grant and R. J. Dowsett and my description has been seen by A. J. Prater: all confirm identification. A. J. Prater tells me that the description suggests that the bird is most likely to have been a first-winter individual, but that at this time of year it is never easy positively to identify a bird as a first-winter individual.

Colour transparencies and detailed descriptions of all three Nearctic vagrants described here have been lodged at the Zoological Museum, Tring, Hertfordshire, England, and colour transparencies of the Lesser Yellowlegs and the 1978 Pectoral Sandpiper are on file at the Livingstone Museum, Zambia.

There have been few records of Nearctic waders from sub-Saharan Africa. Not surprisingly, the most frequently-recorded species is Pectoral Sandpiper, which is the most regularly-seen of these species in western Europe. K. D. Smith (*in* Moreau 1972) gives 6 records of Pectoral Sandpiper from localities south of the Sahara and there are records from Tree (1972) and Kemp (1972), so its occurrence in Zambia is not unexpected. However the only records of Lesser Yellowlegs given in Moreau (1972) are those of Keith (1968) from Uganda and of Wallace (1969) from Nigeria. G. C. Backhurst informs me that the Uganda record is rejected in the forthcoming *Birds of East Africa* (Britton *et al.*), so there is only one previous acceptable record of this species, which must be an extremely rare vagrant to this part of the continent.

References:
Keith, S. 1968. Notes on birds of East Africa, including additions to the avifauna. *Amer. Mus. Novit.:* 2321.
Kemp, A. C. 1972. A further southern African report of the American Pectoral Sandpiper. *Bull. Brit. Orn. Cl.* 92: 23.
Moreau, R. E. 1972. *The Palaearctic-African Bird Migration Systems.* Academic Press: London and New York.
Prater, A. J., Marchant, J. H. & Vuorinen, J. 1977. *Guide to the Identification and Ageing of Holarctic Waders.* Tring: British Trust for Ornithology.
Tree, A. J. 1972. Pectoral Sandpiper *Calidris melanotos* in Botswana. *Ostrich* 43: 184.
Wallace, D. I. M. 1969. Lesser Yellowlegs at Lagos: a species new to Nigeria. *Bull. Nigerian* Orn. Soc. 6 (No. 22): 58.

Address: P. B. Taylor, P.O. Box 70415, Ndola, Zambia. *Present address:* c/o Data Centre Ltd., P.O. Box 30286, Nairobi, Kenya.

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Additions to a discography of bird sound from the Neotropical Region

by Jeffery Boswall and Ron Kettle

Received 14 April 1980

This paper supplements that of Boswall and Freeman (1974). It lists commercially issued gramophone records and cassettes that include sound production by birds (or human mimicry of birds) recorded within the Neotropical zoogeographical region which have been published or have come to light since 1974. Copies are held at the British Library of Wildlife Sounds, 29 Exhibition Road, London S.W.7. Unpublished recordings may be held by any of the wildlife sound libraries of the world listed by Boswall

& Kettle (1979), but particularly by those in South and North America. Easily the biggest collection is held at the Library of Natural Sounds at Cornell University in the U.S.A. where, as Gulledge (1979) has recently reported: Mexican birds are well represented, as are those of El Salvador; smaller amounts of material are available from Costa Rica and Panama; among the West Indies birds, those of Jamaica, Puerto Rico, Hispaniola and some adjacent islands are well represented as are, to a lesser degree, those of the Bahamas, Trinidad and St. Lucia; extensive material is available from Venezuela, Peru and southeastern Brazil as well as some from Colombia, Surinam and Argentina. Published recordings of Neotropical species recorded outside the Neotropics may be traced firstly by consulting bibliographies of discographies (Boswall 1974, 1979), then the discographies themselves.

Corrections

Under 8, for "12-inch" read "10-inch". Under 11 for "*Songs of Birds of Brazil*" read "*Symphony of Brazilian Birds* (*Songs of Birds of Brazil*)". Jan Lindblad asks me to point out that on his disc *In Green Paradise* (Swedish), no. 37 in the earlier discography, the bird identified as the Mottled Owl *Ciccaba virgata* is in fact the Great Potoo *Nyctibius grandis;* and that the species given as the Least Pygmy-Owl *Glaucedium minutissimum* is the Ferruginous Pygmy-Owl *G. brasilianum*. For "43. Coffey, Ben B. Jr. and Evans, E. R." read "43. Coffey, Ben B. Jr. and Edwards, Ernest P."

Additions

44. Greenhall, A. M. & Collias, N. 1954. *Sounds of Animals*. One 30cm 33.3 r.p.m. disc FX 6124. Folkways Records and Service Corp., 165 W. 46 St., New York City. [1 species, *Rhea americana*.]

45. Weyer, Edward M. 1955. *Music from the Mato Grosso*. One 30cm 33.3 r.p.m. disc FE 4446. Folkways Records and Service Corporation, 43 W.61st St., New York City, U.S.A. [Human mimicry of 4 birds and 5 mammals.]

46. Van de Werken, H. 1959. *Vogel Symphonie*. One 17cm 45 r.p.m. disc, no. DE99 247, published with the *Artis-Animal-Encyclopaedia,* 254 pp. by Ploegsma for the Royal Zoological Society, Plantage Kerklaan 49, Amsterdam, Holland. [Among 33 species recorded in Amsterdam zoo are 6 Neotropical species.]

47. Simms, Eric & Scott, Peter. 1970. *Sounds of my Life*. One 30cm 33.3 r.p.m. disc. BBC REC 59M. BBC Records & Tapes, London. [Includes 3 Neotropical species.]

48. Simms, E. 1971. *Wildlife in Danger*. One 30cm 33.3 r.p.m. disc RED55M. BBC Records, London. [Includes 3 Neotropical birds.]

49. Graul, A. 1971. *Im Zoo*. One 17cm 45 r.p.m. disc, no. 712. A. Graul, Kisslingweg 44, 713 Mühlacker (Württemberg), West Germany. [Among 18 species are the Sun Bittern *Eurypyga helias* and a trumpeter *Psophia* sp.]

50. Englehard, Virginia. 1972. *Voices of Nature 2: Songs of Caprimulgids and Cuckoos*. One standard cassette. Cornell Laboratory of Ornithology, 159 Sapsucker Woods Road, Ithaca, New York 14850, U.S.A. [12 species, 5 Neotropical.]

51. Roché, J-C. 1973. *Birds of Venezuela*. One 30cm 33.3 r.p.m. stereo disc, G11. L'Oiseau Musicien, 58 rue du Dr. Calmette, Sequedin, 59320 Haubourdin, France. [38 birds, 1 mammal, some insects and amphibians.]

52. Roché, J-C. 1974. *Oiseaux*. One 17cm, 45 r.p.m. disc, no. 16 049. L'Oiseau Musicien, 58 rue du Dr. Calmette, Sequedin, 59320 Haubourdin, France. [9 birds, 4 Neotropical.]

53. Hardy, John William. 1975. *Voices of Neotropical birds*. One 30cm 33.3 r.p.m. disc, ARA1. Obtainable from J. W. and C. K. Hardy, 1615 N.W. 14th Avenue, Gainesville, Florida 32605, U.S.A. [About 60 birds.]

54. White, Terry. 1977. *Birds of Trinidad and Tobago*. One standard cassette. Obtainable from T. C. White, 6c Rosebery Avenue, Harpenden, Herts., U.K. [31 birds.]

55. Wolf, Larry L. 1977. *Species relationships in the avian genus* Aimophila. One 30cm 33.3 r.p.m. disc, AOU-1, accompanying Ornithological Menographs no. 23 of the same title. American Ornithologists' Union. Obtainable from Glen E. Wolfenden, Dept. Biology,

University of South Florida, Tampa, Florida 33620, U.S.A. [7 Neotropical *Aimophila* birds and 7 background birds.]

56. Hardy, John William & Coffey, Ben B. 1977. *The Wrens*. One 30cm 33.3 r.p.m. disc, ARA 2. Obtainable from J. W. and C. K. Hardy, 1615 N.W. 14th Avenue, Gainesville, Florida 32605, U.S.A. [43 birds, 39 Neotropical.]

57. Jellis, Rosemary. 1977. *Bird sounds and their meaning*. One 30cm 33.3 r.p.m. disc no. BBC OP 224. British Broadcasting Corporation, 35 Marylebone High Street, London W1M 4AA. [Many species including 1 Neotropical—*Steatornis*.]

58. Hardy, John William. 1978. *Voices of some Galapagos birds*. One standard cassette, ARA 4. Obtainable from Holbrook Travel Agency, 3520 N.W. 13th Street, Gainesville, Florida 32601, U.S.A. [14 birds.]

59. Gunn, William W. H. & Gulledge, James L. 1978 (although dated 1977). *Beautiful Bird Songs of the World*. Two 30cm 33.3 r.p.m. discs, NAS 1000 A/B and NAS 1000 C/D, and 12 pp. of text and illustration. National Audubon Society and Cornell Laboratory of Ornithology, 159 Sapsucker Woods Road, Ithaca, New York 14853, U.S.A. [Side 3 includes 6 Neotropical birds.]

60. Chapelle, Richard. About 1978. *Indiens et animeaux sauvages d'Amerique du Sud*. One 30cm 33.3 r.p.m. disc no. UD 30 1293. Richard Chapelle, Boite Postal 1225, 76064 Le Havre, Cedex, France. [About 5 birds, 1 amphibian and 1 fish.]

61. Strange, Ian. 1979. *South Atlantic Islands: a portrait of Falkland Island Wild life*. One 30 cm 33.3 r.p.m. disc, SDL 299 mono. Saydisc Records, The Barton, Inglestone Common, Badminton, Gloucestershire GL9 1BX, U.K. [27 birds, 5 mammals.]

62. Bruce, T. 1979. *Sounds of Slimbridge*. One standard cassette. The Wildfowl Trust, Slimbridge, Gloucestershire, U.K. [14 species.]

63. Eickhoff, H-J. & Peters, G. About 1979. *Tierstimmen aus dem Krefelder Zoo*. One standard cassette. Krefelder Zoo, Verdinger Strasse 377, 415 Krefeld, W. Germany. [4 species.]

64. Frisch, J. D. No date. *Tropical birds* (Dutch). One 30cm 33.3 r.p.m. disc. Geluid 12 Omega 333.069 Dutch Record Company, Weesp, Holland.
A Dutch version of no. 7 in the discography (Boswall & Freeman 1974).

65. Merrick, William. About 1979. *Sounds of the Jungle*. One standard cassette. Panajachel Guatemala. Obtainable from: Petersen Book Co., P.O. Box 966, Davenport, Iowa 52805, U.S.A. [42 species, plus 5 mammals.]

66. Coffey, Ben B. *et al.* 1980. *Voices of New World nightbirds: owls, nightjars and their allies*. One 30cm 33.3 r.p.m. disc, ARA-6. J. W. and C. K. Hardy, 1615 N.W. 14th Ave., Gainesville, Florida 32611. [75 species (about 50 recorded in Neotropical region). Long-tailed Potoo should be deleted from the contents section of the sleeve notes. The recording was removed from the record when it was shown to be a misidentification. In the species annotations beginning with reference to cut 54, read 55; for cut 65 (sic) read cut 66, etc.; in this way the annotations will correspond with the contents notes and the recordings on the disc. *Otus lawrencii* appears as no. 4 in the contents notes but is the second species on side 1 of the disc.]

Acknowledgements: Those who helped include Richard Chapelle, Wendy Dickson, James Gulledge, John William Hardy, Kees Hazevoet, and Terry White.

References:

Boswall, Jeffery. 1974. A bibliography of wildlife discographies. *Recorded Sound* 54: 305.
— 1979. Supplementary bibliography of wildlife discographies. *Recorded Sound* 74–75: 72.
— & Freeman, W. P. 1974. A discography of bird sound from the Neotropical zoogeographical region. *Bull. Brit. Orn. Cl.* 94(2): 73–76.
— & Kettle, Ron. 1979. A revised world list of wildlife sound libraries. *Biophon* 7(1): 3–6.
Gulledge, James L. The Library of Natural Sounds at the Laboratory of Ornithology, Cornell University. *Recorded Sound* 74–75: 38–41.

Address: Jeffery Boswall and Ron Kettle, British Library of Wildlife Sounds, B.I.R.S., 29 Exhibition Road, London SW7 2AS.

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BRITISH MUSEUM (NATURAL HISTORY) 30 DEC 1980 PURCHASED ZOOLOGY LIBRARY

IN BRIEF

Bird material needed

Merseyside County Museums are providing help to archaeologists in the northwest of the U.K. by identifying and analysing bird remains from excavations. Consequently we need to extend our osteological research collections and would be very grateful to receive British bird carcasses – especially passerines – such as those normally discarded after research projects.

If you know of such material, please contact us at Liverpool (051) 207 0001 (extension 16) or post the specimens (well sealed in polythene) to the address below. We will gladly refund postage.

8 October 1980 Miss Clem Fisher

Dept. Vertebrate Zoology, Merseyside County Museums,
William Brown Street, Liverpool L3 8EN.

A new record of the Sooty Swiftlet *Callocalia vanikorensis* from New Ireland

Among a collection of birds collected by Bruce Beehler on New Ireland in the Bismarck Archipelago, I find a specimen of *Collocalia vanikorensis* which has not previously been recorded from that locality.

Although Mayr (1937, *Amer. Mus. Novit.* No. 915) examined skins from both New Britain and New Hanover Islands, he was unable to determine their racial affinities because of the unsuitability of his material (specimens were either immature or in moult). However, he does give wing measurements for these birds as varying from 117 to 126 mm. Our specimen from the island of New Ireland, which lies between New Britain and New Hanover, has a wing measurement of 111 mm. The bird appears to be in fresh plumage, but the pale tips to the secondaries indicate that it may not be fully adult. Other measurements are: tail, 49; tail furcation 6 mm; weight 8.9 gm. The bird was obtained in a forest 10 km NNW of Cape Narum at an altitude of 720 m on 16 February 1976. The sex is unrecorded.

28 October 1980 S. Dillon Ripley

Smithsonian Institution, Washington, D.C. 20560, U.S.A.

BOOKS RECEIVED

Scientific American, Readings from. 1980. Introductions by Barry W. Wilson. Pp. 1–276. Many drawings and diagrams, some in colour. Freeman: Oxford and San Francisco. Board £10.60. Paper £4.90.

Surprisingly, these 25 papers, reprinted here verbatim, form over half the total number of articles about birds published in *Scientific American* 1948–1979. All of them were important reviews or studies when first published and nearly all the subject matter has been overtaken by more recent research; nevertheless every one repays careful re-reading, even if written 25 years ago. The subjects are divided between flight, migration and navigation, evolution, behaviour, physiology and song, and birds and people. The paperback review copy is excellently produced and the price exceptional.

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Published by the BRITISH ORNITHOLOGISTS' CLUB and printed by
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